82-2

GRANULAR AGGREGATE RESOURCES OF COLDSTREAM (21 J/6), NAPADOGAN (21 J/7), HAYESVILLE (21 J/10) and JUNIPER (21 J/11)

82-2

LEGISLATIVE LIBRARY
MAY
FREDERICTON, N.B.

Open File Report 82-2

ISSN 0712-4562

NATURAL RESOURCES
NEW BRUNSWICK
RESSOURCES NATURELLES
NOUVEAU-BRUNSWICK

Government of Canada / Gouvernement du Canada
Regional Economic Expansion / Expansion Économique Régionale

84- 3891 /

This report has been prepared for:

Mineral Resources Division
Department of Natural Resources
Province of New Brunswick

Hon. E. G. Allen, Minister

1982

Funding in part provided by:

Government of Canada
Regional Economic
Expansion

Hon. Herb Gray, Minister

GRANULAR AGGREGATE RESOURCES
OF
COLDSTREAM (21 J/6), NAPADOGAN (21 J/7)
HAYESVILLE (21 J/10) AND JUNIPER (21 J/11)

Mineral Resources Division
Department of Natural Resources
New Brunswick

This is a Federal-Provincial development project, funded under the Minerals and Fuels Subsidiary Agreement of the Canada-New Brunswick General Development Agreement by the Government of New Brunswick and the Department of Regional Economic Expansion of Canada.

Copies available by contacting:

Mineral Resources Division
Department of Natural Resources
P. O. Box 6000, Fredericton, N.B.
E3B 5H1

Report No.: Open File Report 82-2

Authors: Marilynn Hunter; Claire Lavergne (Geocon Inc.)

Cover: Tim Fevens

Catalogue No.: ISSN 0712-4562

ABSTRACT

This report provides an inventory and evaluation of the distribution, extent, thickness and quality characteristics of granular aggregate deposits in the map-area covered by four 1:50,000 N.T.S. mapsheets: Coldstream (21 J/6), Napadogan (21 J/7), Hayesville (21 J/10) and Juniper (21 J/11). Units of granular materials were mapped and comments made as to their origin. Sampling was carried out to determine the quality of the materials and estimates of recoverable reserves were calculated for most of the aggregate sources.

The major sources of aggregate are glaciofluvial deposits located along the Southwest Miramichi, Nashwaak and Becaguimec Rivers and in a broad outwash plain in the area of Juniper. Significant resources of aggregate are in ice-contact deposits, found along major rivers and sparsely scattered over the rest of the map-area. Total recoverable reserves are estimated to be 80×10^6 m^3, of which a substantial portion is of fair to moderate quality.

RESUME

Ce rapport décrit la nature, l'étendue, l'épaisseur et la qualité des dépôts granulaires de la région couverte par trois cartes du Système Topographique National, à une échelle de 1:50,000: Coldstream (21 J/6), Napadogan (21 J/7), Hayesville (21 J/10) et Juniper (21 J/11). Les unités des dépôts granulaires ont été cartographiées selon leur mode de déposition. L'échantillonage a permis de déterminer la qualité des dépôts. Une évaluation des ressources exploitables a été faite pour la plupart des sources d'agrégat.

Les dépôts fluvioglaciaires situés le long des rivières Southwest Miramichi, Nashwaak et Bécaguimec et une large plaine d'épandage dans la région de Juniper représentent les principales sources d'agrégat de cette région. Les dépôts de contact glaciaire offrent aussi des ressources importantes. Ceux-ci se retrouvent le long des rivières importantes et éparpillés dans toute la région à étudiée. Le total des réserves de dépôts granulaires a été évalué à 80 x 10^6 m^3. De cette valeur, une grande proportion est de bonne à moyenne qualité.

TABLE OF CONTENTS

	Page
ABSTRACT/RESUMÉ	i
TABLE OF CONTENTS	iii
ACKNOWLEDGEMENTS	v
INTRODUCTION	
1.1 Location	1
1.2 Access	1
1.3 Present Study	1
1.4 Duration of Study	2
1.5 Previous Work	2
PHYSIOGRAPHY	
2.1 Topography	3
2.2 Drainage	3
2.3 Bedrock Geology	4
2.4 Glacial Geology	4
AGGREGATE RESOURCES	
3.1 Classification of Materials	7
3.2 Description of Materials and Aggregate Production Potential	
3.21 Alluvium	8
3.22 Glaciofluvial outwash deposits	9
3.23 Ice-contact deposits	10
3.24 Ablation till	11
3.25 Other sources of aggregate	12
3.3 Field and Laboratory Methods	13
3.4 Reserve Calculations	14
3.5 Quality Limitations	15
SELECTED REFERENCES	17

Page

ILLUSTRATIONS

Figure 1: Location of Study Area vi
Figure 2: Physiographic Subdivisions of New Brunswick 6

APPENDIX 1: Sample Descriptions 19

APPENDIX 2: Borrow Pits in Fractured and Weathered Bedrock 203

PLATES

81-74: Juniper (21 J/11)
81-75: Hayesville (21 J/10)
81-76: Coldstream (21 J/6)
81-77: Napadogan (21 J/7)

ACKNOWLEDGEMENTS

We would like to thank David E. Baird (formerly with Geocon Inc.) for his cooperation in supervising the project; David E. Baird and Ron A. Brinsmead (Water Resources Branch, N.B. Department of the Environment) for reviewing and editing the report; Ron A. Brinsmead for the insight obtained from discussions of local and regional Quaternary geology; Mineral Resources Division, N.B. Department of Natural Resources for use of unpublished 1:50,000 surficial geology field maps; Water Resources Branch, N.B. Department of the Environment for water well records; N.B. Department of Transportation for aggregate sample and test reports; J.D. Irving, Miramichi Lumber Company, Valley Forest Products and Fraser Inc. for use of their forest roads; Fenco Consultants for their cooperation in the preparation of the maps and report; Geocon Inc. personnel for their support in this endeavour; John Astle and William (Bill) Heaton for their interest and help as field assistants and lab technicians.

M. Hunter
C. Lavergne

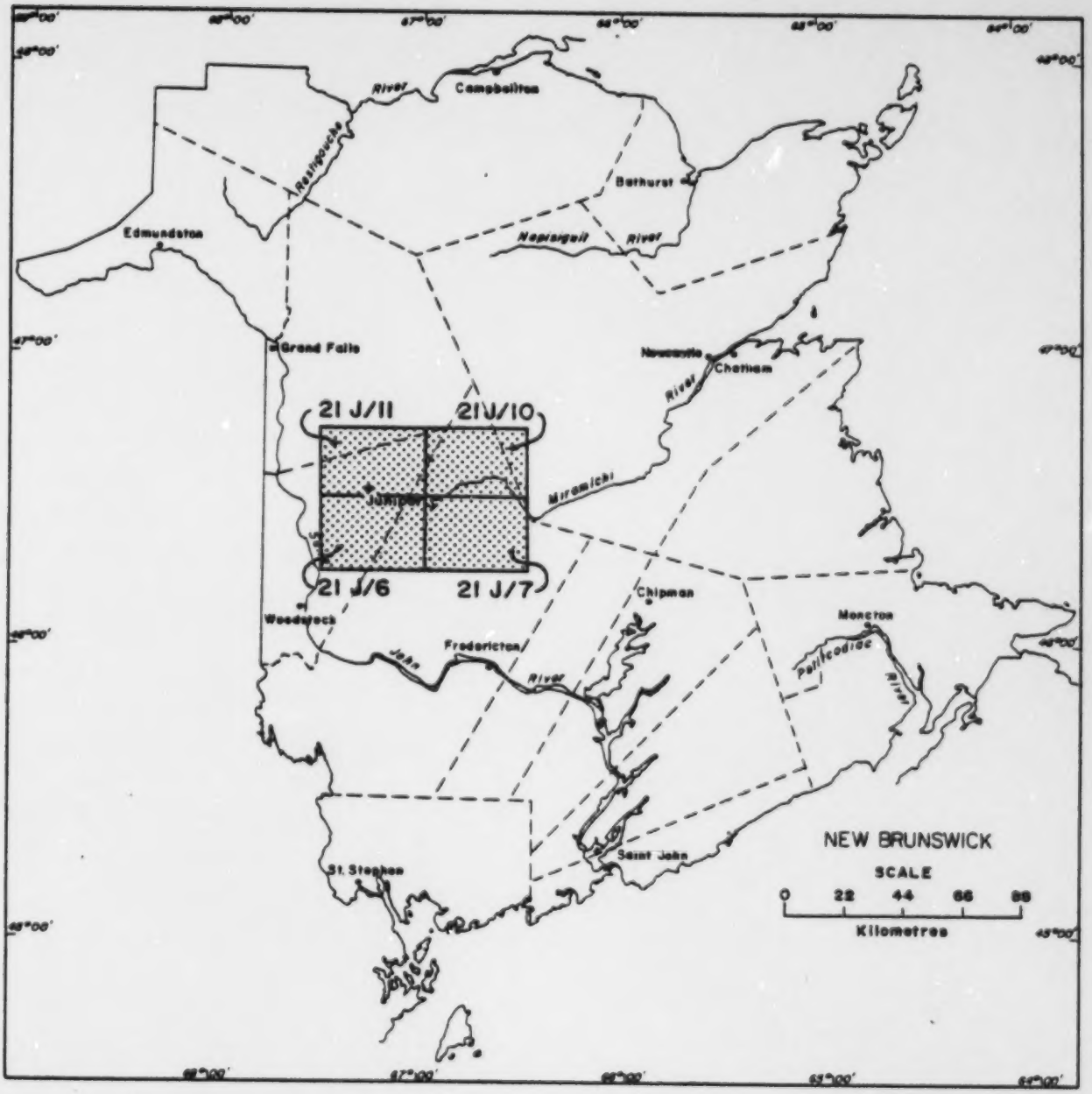

Figure I
Location Of Study Area

INTRODUCTION

1.1 Location

The study area is located in central western New Brunswick (Figure 1), covering 4,250 km^2. It is bounded by latitudes 46°15' N and 46°45' N and longitudes 66°30' W and 67°30' W.

Mapping was carried out at a scale of 1:50,000 using four N.T.S. mapsheets: Coldstream (21 J/6), Napadogan (21 J/7), Hayesville (21 J/10), Juniper (21 J/11).

Stanley and Juniper are the only sizeable communities in the area.

1.2 Access

The map-area is crossed by only one highway, the 107. A short segment of Highway 8 (Fredericton to Newcastle) passes through the southeast corner of the map-area.

All-weather gravel forest access roads service most of the area. The remainder is covered by abandoned logging roads.

1.3 Present Study

Geocon Inc. was retained by the Mineral Resources Division of the New Brunswick Department of Natural Resources to carry out a granular aggregate resource inventory of the Coldstream, Napadogan, Hayesville and Juniper mapsheets as part of a province-wide survey program.

The aim of this study is to provide basic information on the distribution, extent, thickness and quality characteristics of granular aggregate deposits in the map-area. Previously published information was consulted and unpublished information was obtained from the Mineral Resources Division, the New Brunswick Department of Transportation and the

Water Resources Branch of the provincial Department or the Environment. Fieldwork involved examination of natural and man-made exposures and was supplemented by aerial photograph interpretation. Reserve estimates are based on field observations.

1.4 Duration of Study

Field investigations for this map-area were conducted from late July to early September, 1981 as part of a larger contract covering four study areas totalling twelve mapsheets. The field program for all four areas was carried out by two field teams of two personnel each from mid-summer to early fall. Laboratory and office studies involved in the preparation of these reports were undertaken concurrently during the fall of 1981.

1.5 Previous Work

Early references to the surficial geology of the area were made by Chalmers (1884) around the turn of the century. More detailed work carried out by others [Cooper, 1980; Finamore, 1981; Lee, 1962] primarily along the Saint John River valley, discusses the glacial history in a more modern context. Rampton and Paradis (1981a) have prepared a report and map of a revised Quaternary geology which covers the study area at a scale of 1:250,000.

Hamilton (1973) compiled a map showing the granular aggregate resources in New Brunswick. Since then, as part of an ongoing province-wide survey, granular aggregate inventories have been completed in some neighbouring map-areas at a scale of 1:50,000.

Bedrock geology mentioned in this report was obtained from the provincial bedrock map compiled by Potter et. al. (1979).

PHYSIOGRAPHY

2.1 Topography

The study area lies within divisions of the Appalachian physiographic region (figure 2): the Chaleur Uplands, the New Brunswick Highlands and the Maritime Plain (Bostock, 1970).

The Maritime Plain is present only in the southeast corner of the map-area at an elevation of 150 m a.s.l. The New Brunswick Highlands rise to the west and north to a maximum of 580 m a.s.l. On their west flanks, the Highlands merge imperceptibly with the Chaleur Uplands. Generally, the Chaleur Uplands are less rugged than the New Brunswick Highlands, having a local relief of 90-120 m compared to 150-210 m for the latter. The Uplands rise gradually to the north from 210 meters to 365 m a.s.l.

2.2 Drainage

Most of the map-area is drained by the Southwest Miramichi River and its major tributary the Taxis River.

Rampton and Paradis (1981a) suggest that preglacial drainage patterns have been deranged in some areas. "The Southwest Miramichi River above Juniper may have had its course diverted to an eastward direction when glaciers retreating to the west blocked westward drainage. Of special note is the deep dissection of the Highlands by the Southwest Miramichi River and its tributaries between Miramichi Lake and McBean Brook."

The remainder of the map-area is drained primarily by the Nashwaak River to the south and several small streams to the west, the Becaguimec, Shikatehawk and Coldstream Rivers, all tributaries of the Saint John River.

2.3 Bedrock Geology

A geological map of New Brunswick was compiled in 1979 by Potter, Hamilton and Davies. The authors indicate the occurrence of Pennsylvanian sedimentary rocks underlying the Maritime Plain (figure 2) and within a small area south of Brighton Mountain, along the Becaguimec Stream.

The New Brunswick Highlands are made up mainly of a complex of Silurian and Ordovician sedimentary rocks. The latter are cut by dykes or sills of Ordovician volcanics. Devonian igneous rocks also occupy a good proportion of the Highlands. Within the Becaguimec watershed, Mississippian and Pennsylvanian sediments are predominant. These rocks also border the eastern flank of the Highlands.

The Chaleur Uplands are underlain by Silurian and Devonian greywacke and slate. There is also an occurrence of sandstone, conglomerate and minor volcanic rocks of the same age along the north branch of the Southwest Miramichi River.

2.4 Glacial Geology

During the late Wisconsin, ice probably covered all of New Brunswick. Central New Brunswick has been affected by glacial ice from two sources: (1) ice originating to the north and west - probably Laurentide ice which flowed from a source north of the Saint Lawrence River valley through gaps in the Notre Dame Mountains, and (2) local centres of ice accumulation in the Maritime Plain - the Gaspereau ice centre (Rampton and Paradis, 1981a, 1981b). Several phases of late Wisconsin glaciation have been recognized and contribute to the complex glacial history of the area. This has been discussed more fully in Quaternary and surficial geology reports covering this map-area. (Rampton and Paradis, 1981; Mott, 1975)

Evidence of earlier glaciations has been found in the nearby Saint John River valley (Rampton and Paradis, 1981a; Lee, 1962). The most recent events are of greatest significance however, since they are responsible for the present day character and distribution of landforms and surficial

materials. Most of the surficial materials in New Brunswick consist of glacial drift which is deposited (1) directly as a result of glacial activity, and includes various types of moraine (basal and ablation till), and (2) by the action of meltwaters, which includes stratified drift (ice-contact and glaciofluvial outwash). Postglacial erosion of glacial drift has resulted in the formation of alluvial deposits (floodplains and terraces) along most streams. Of interest to this study was the nature and extent of materials suitable as aggregate sources. Meltwater deposits are considered to be the best sources of this commodity although other drift deposits and deeply weathered bedrock have been utilized where the former are not available or are in short supply.

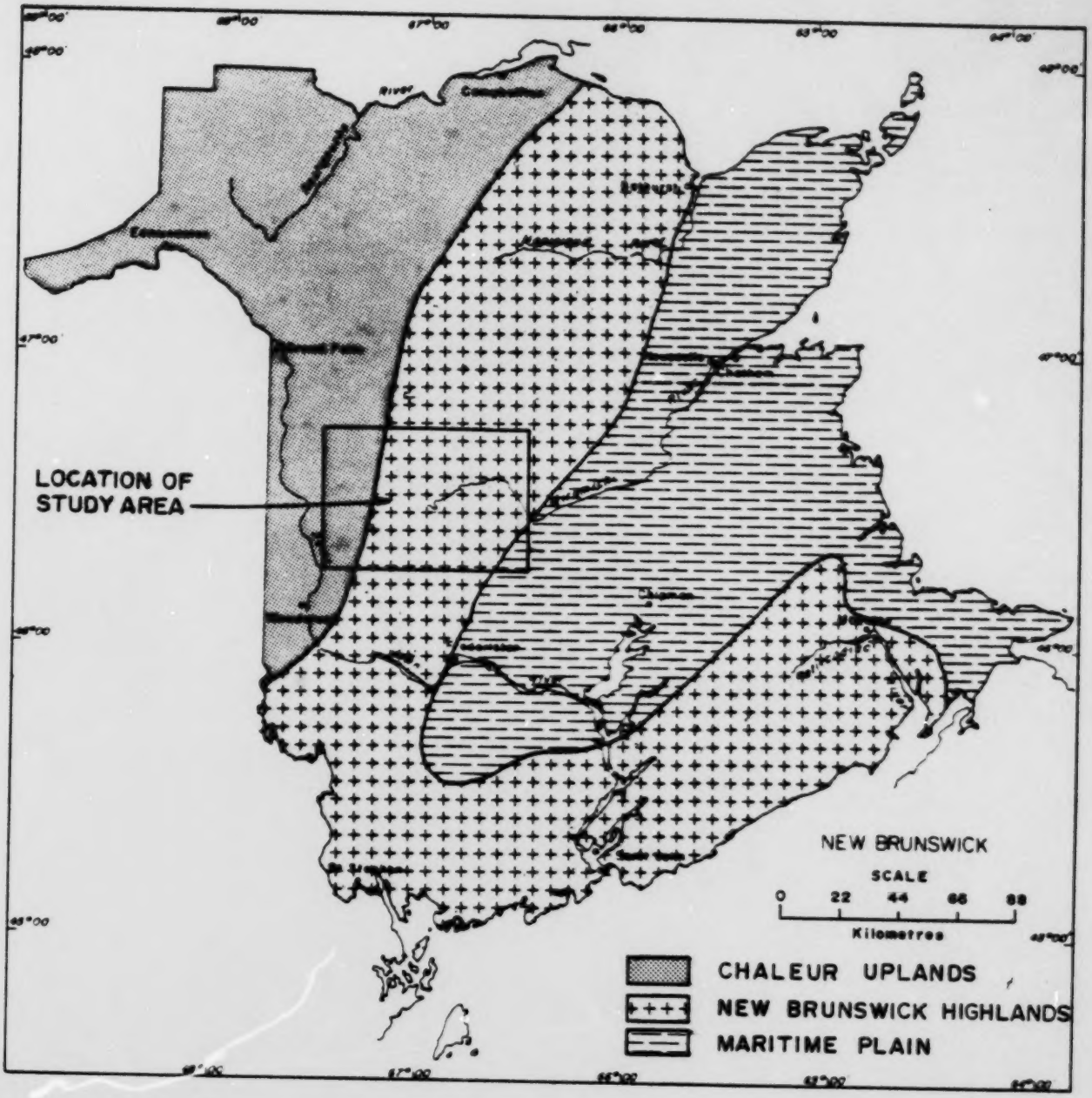

Figure 2

Physiographic Subdivisions Of New Brunswick

AGGREGATE RESOURCES

3.1 Classification of Materials

Unconsolidated materials are initially separated according to their origin or the way they are formed. They may be then subdivided according to their characteristics such as texture, surface expression and modifying processes. In this report, granular materials have been presented in such a way as to reflect their origin or mode of formation and their texture.

Four genetic materials have been identified as potential sources of granular aggregate. They are (1) alluvium, (2) glaciofluvial outwash deposits, (3) ice-contact deposits, and (4) ablation till. These are described more fully in the following section (3.2).

Texture refers to the size, roundness and sorting of particles in unconsolidated sediments. Roundness and sorting are self-explanatory. Particle size distribution is based on a slightly modified version of the Unified Soil Classification System. The following table provides the details.

General Term	Specific Term	Particle Diameter	Sieve Sizes
Fines	Clay	Less than 0.002 mm	--
	Silt	0.002 to 0.075 mm	0.002 mm to #200
Sand	Sand	0.075 to 4.75 mm	#200 to #4
Gravel	Pebbles	4.75 to 75 mm	#4 to 75 mm
	Cobbles	75 to 200 mm	75 mm to 200 mm
	Boulders	Larger than 200 mm	Over 200 mm

3.2 Description of Materials and Aggregate Production Potential

3.21 Alluvium

Alluvial materials are transported and deposited by streams and rivers. Sediment is transported in two ways. Fine sand, silt and clay particles are carried in suspension while sand, pebbles and larger clasts are rolled and bounced along the river bed. Deposition occurs when the sediment load exceeds the transport capability of the flowing water. This commonly occurs where there is a decrease in stream gradient or where a constricted channel emerges into an unconstricted relatively broad area.

Alluvial materials consist of well sorted and bedded gravel, sand, and silt. Particle size may range up to cobbles. Clasts are generally rounded. Alluvial deposits are easily recognized by their well-defined bedding and stratification, often consisting of alternating beds of relatively finer and coarser material. In general, texture of alluvial sediments will vary with the gradient of the depositing stream. Coarse gravels occur along steep mountain streams; fine gravels, sands and silts along low gradient channels.

Alluvial sediments are found on the floodplains and terraces of present day streams and rivers. Floodplains are not included on the maps as they show evidence or likelihood of periodic flooding. High water tables would severely limit exploitation.

Alluvial terraces are found along the Becaguimec River (J6-35), in the Juniper - Deersdale area along the Southwest Miramichi River (J6-62), and along the Nashwaak River (J7-13). The Becaguimec and Nashwaak terraces are low-lying and mostly under cultivation or pasture. The Juniper - Deersdale terraces are low-lying and sometimes difficult to distinguish from the glaciofluvial terraces in the area. Fluctuating water tables make these terraces not very desirable as aggregate sources.

Other alluvial deposits are small, being confined to narrow terraces along tributary streams and brooks of the Southwest Miramichi River. In general, these are suitable only for local borrow purposes.

3.22 Glaciofluvial outwash deposits

Glaciofluvial outwash materials are transported and deposited by streams and rivers directly in front of glacial ice. They differ from their alluvial counterpart in their variability, a consequence of their depositional environment. Typically a proglacial environment is unstable due to rapid fluctuations in discharge and sediment load of meltwater streams and changing positions of the ice front.

Glaciofluvial outwash materials consist of well to poorly sorted, bedded to massive sediments that range in texture from silt and fine sand deposited under low flow conditions, to massive cobble-boulder beds resulting from major floods. Variations of texture are typical. Gravels generally contain a sandy matrix but the presence of washed-in silt is also common. Occasional catastrophic events caused by the outbursts of ice-dammed lakes may result in deposition of much heterogeneous material.

A broad glaciofluvial outwash plain is located in the Juniper area. The north and west portions of this outwash plain, considered to be the proximal facies, have a gravelly sandy texture (J11-11, 12, 39, 38) which grades to a pebbly sand (J11-10) and finally a sand (J11-09) at the distal facies in the confluence area of the Southwest Miramichi River, Juniper Brook and the North Branch Southwest Miramichi River. Numerous small channels indicate that meltwater flowed southward from a retreating ice-margin located near the Tobique - Miramichi divide north of Juniper, creating this expansive area of outwash. Reserve calculations for this complex indicate quantities in excess of 45×10^6 m^3.

Large glaciofluvial outwash terraces are located along the Southwest Miramichi and Nashwaak Rivers. In general these are good sources of granular materials and have been or are being actively exploited. Small terraces of no lesser quality are located along the Becaguimec River. Total reserves of these materials are estimated to be 50×10^6 m^3. Most of the aggregate is suitable for borrow in the pit run state, and quality could be improved for high specification use with processing.

The northern part of Rocky Brook and the Little Dungarvon River, in the northeast corner of the map-area, have moderately extensive deposits of glaciofluvial origin. It is possible that this functioned as a major escape route to the east for meltwater. Material is very coarse (J10-22, 23, 24, 34) and mostly unsuitable even as borrow without processing. Reserve estimates for these are shown in Appendix 1.

Meltwater channels often have some glaciofluvial materials associated with them. Two such channels are located south of Beaver Brook Lake emptying into Burnthill Brook and in the lower Cross Creek just above its confluence with the Nashwaak River (J7-14, 15).

3.23 Ice-contact deposits

Ice-contact granular materials are transported and deposited by meltwater streams in contact with glacial ice. Rapid fluctuations in discharge and sediment load of meltwater streams and changing positions of ice margins results in an unstable depositional environment. Sediments deposited in contact with a glacier tend to slump and slide as supporting ice melts, resulting in irregular surfaces on landforms, and faults and distorted bedding within the materials.

Ice-contact sediments consist of sorted and non-sorted, bedded and massive materials that range in texture from silt and fine sand deposited under low flow conditions to cobble-boulder beds resulting from major floods. Abrupt variations of texture are typical. Lenses or pockets of silt may be present where meltwater was locally ponded. Layers or pockets of flow till resulting from saturated supraglacial debris sliding off the ice may be included in the materials.

Ice-contact sediments are found in a variety of topographic forms, the more easily recognizable being kames, kame terraces and eskers. Total reserves from these sources are estimated to be 8.5×10^6 m^3. Most of this material should be processed for any use other than local borrow purposes, as fines and/or cobble or boulder content is usually high.

Kames are conical mounds or small hills of sand and gravel with a local relief of 2 m to several tens of metres. They form where meltwater sediments are deposited in depressions of the ice surface and later melt out to form chaotically arranged hills and hollows. Kames may be single or grouped. Within the map-area kame deposits are small. These are located in the southwest corner and described on sample description sheets J6-16, J6-23, and J6-30 (Appendix 1). A kettle and kame deposit is described by J11-25.

Kame terraces form when glaciofluvial sediments are deposited between the glacial ice and an adjacent hillside. Steep ice-contact scarps develop as the ice recedes and leaves the outer edge of the terrace without any lateral support. Collapse and slumping occurs along this scarp and melting of buried ice produces an irregular terrace surface. Kame terraces are locally good sources of aggregate when the cobble and/or boulder content is not too high and fines are not excessive. J6-16, J6-36, and J7-10 are such deposits.

Eskers are sinuous, steep-sided ridges of sand and gravel formed by the melting out of sediment-choked tunnels of subglacial streams. Their length varies from several tens of metres to many kilometres; their height ranges from a few metres to 20 to 30 m. The only esker with sizeable reserves is located at the south border of the Napadogan mapsheet and is described by J7-08. The west end of the Bartholomew esker described by Lavergne and Hunter (1982) is located on the eastern border of the Hayesville mapsheet.

Other ice-contact deposits are located throughout the map-area and in most cases, have been used locally for borrow purposes. Reserves are indicated in Appendix 1.

3.24 Ablation till

Ablation till is formed during deglaciation. As the ice melts, debris on the surface slumps and slides back and forth eventually to be deposited as irregular hummocks and ridges or as a blanket overlying basal till. Hummocky or ridged ablation till can be difficult to distinguish from ice-contact granular materials; blankets can only be recognized by ground

observation of exposed sections. Ablation till is commonly found where large ice masses have stagnated in situ.

Ablation till is typically a loose, non-sorted, non-stratified sandy, silty gravel. Fines may be selectively washed out during deposition. Pockets of stratified silts, sands and/or gravels as well as very large boulders may be present within the deposit.

Two areas of ablation till were recognized in the map-area but due to indistinct boundaries on the aerial photographs and poor access, these have not been outlined on the maps. Generally, these deposits are poor sources of granular aggregate and are used only for local borrow purposes.

The first is located northeast of the Keswick River and extends approximately to the Napadogan Brook. This till has been described by J7-01 and J6-45; other borrow pits in this material are shown on the maps. It is thought that this is an extension of the ablation till identified by Finamore (1981) in the northeast corner of the Millville map-area.

The second area is somewhat smaller. It is located on the divide between the Becaguimec Rivers and the prominent right angle bend of the Nashwaak River in the Coldstream mapsheet.

3.25 Other sources of aggregate

Numerous borrow pits in weathered granite and broken shale and metasediments were observed in the map-area. A list of these can be found in Appendix 2. Most of this material is used locally for logging road construction.

Another source of granular material is described by J6-21 and J6-21a. It is thought, that the material observed in these pits is colluvium. These deposits are of limited size but appear to be very good sources of angular aggregate. The material is used locally to surface the gravel roads.

Colluvium is material that has reached its present position principally by direct, gravity-induced movement. Colluvium generally consists of massive to moderately well stratified, non-sorted to poorly sorted sediments with any range of particle size.

3.3 Field and Laboratory Methods

Information used in the determination of deposit boundaries and thicknesses was obtained by the examination of all natural and man-made exposures that were encountered while driving all the passable roads within the map-area and was supplemented by aerial photograph interpretation. Many of the exposures were improved by a little shovel work; some had to be dug to expose even a small section. Observation of granular materials at depth was restricted to pit excavations and a few natural cuts, limiting the accuracy of thickness estimates.

Deposit boundaries were determined by field observations where possible and by aerial photograph interpretation. Average material depths used in the calculations of reserves were obtained by modifying, if necessary, the observed depths, taking into account geologic and topographic considerations and air photograph observations of the deposit beyond excavation boundaries. Airphotos at a scale of 1:20,000 were used in the field and later in the office during the preparation of the maps and report.

Samples of granular materials were taken from the best exposures available in partially exploited and unused deposits. Care was taken to obtain samples that were as representative of the deposit as possible. Where notable variation was present within a particular deposit, more than one sample was taken (when feasible) to illustrate this.

For practical purposes, deposits with significant cobble and/or boulder content were sampled by deliberately excluding these large clasts and estimating their number as a percentage of the total exposed face. The mechanical analyses of these samples would therefore represent the particle

size distribution of the finer fractions (less than 75 mm) and should be used with the percentage estimates given in the field notes.

Mechanical and lithological analyses were conducted in the lab during the fall of 1981. For the mechanical analyses, samples were dried, split, sieved, and the results weighed. Approximately one hundred of the largest pebbles (20 mm to 50 mm in size) were used for each of the lithologic analyses. Clasts were subjected to a qualitative "failure- under-impact" test. Clasts that broke were considered unsound and the remainder were considered sound. Lithotype of each pebble was noted. Since this procedure does not conform to any standard tests used by aggregate producers, the material should be tested using conventional methods for soundness and abrasion if it is desirable and otherwise suitable for high specification use.

In addition to field observations and laboratory analyses, Department of Transportation aggregate test reports and Water Resources water well records were consulted for any additional information. Department of Transportation data has been entered in the sample descriptions where there was positive correlation of sites. Water well locations have been plotted on the accompanying maps where drill logs have indicated an intersection with sand and/or gravel. The serial numbers of the locations are noted for future reference.

3.4 Reserve Calculations

Deposit boundaries are shown as approximate and inferred, depending on the availability of adequate evidence to substantiate airphoto interpretations. Reserve calculations based on inferred boundaries should be regarded with a lesser degree of confidence than if the boundaries are approximate.

Similarly, the reliability of the material thickness information will affect the degree of confidence in the reserve figures. Where good exposures of well-defined deposits were observed, thickness data is considerably

more dependable than a poorly exposed section of a deposit with indistinct boundaries.

In general, both thickness and deposit area figures have been kept conservative in making reserve calculations. In addition, reserve figures have been further reduced, somewhat qualitatively, because recoverable reserves are usually significantly less than reserves calculated on a strict "area x thickness" basis. This has been reflected in a reduced average thickness for the deposit.

It must be stressed at this point that the lateral and vertical extent of any deposit is at best an educated guess based on airphoto examination and first-hand appraisal of the deposit. Therefore prior to any exploitation, consideration is required for a detailed examination for qualitative and quantitative evaluation with respect to a specific end use.

3.5 Quality Limitations

The quality of granular aggregate deposits for high specification use is affected by three major factors: texture, clast lithotypes, and alkali-reactivity.

(1) Texture:

A high content of fine particles (smaller than the 200-mesh sieve) renders a potential aggregate material unsuitable for high specification uses in the pit run state. Washing could lower the fines content to an acceptable level however; any processing will increase the cost of exploitation.

An excess of coarse material (cobbles and boulders) can pose operational problems but will not necessarily affect the quality of the deposit. Removal of the "oversize" clasts and the alternative of crushing them are both costly procedures. Crushing, however, might produce a higher grade of aggregate.

In general, a uniform well-graded deposit with few fines and few "oversize" clasts is desirable for most general uses.

(2) Clast Lithotypes:

High specification aggregate should be hard, strong, uncoated, and resistant to both physical and chemical weathering. The lithologic analyses recorded in Appendix 1 have grouped the lithotypes into sound and unsound classes.

There are several ways of assessing the soundness of a lithotype. Detailed petrographic analysis, the magnesium sulphate soundness test and the Los Angeles abrasion loss test are the most common for testing the overall quality of an aggregate. Details for these and other tests are specified by the American Society for Testing and Materials (A.S.T.M.). Methods used in this study are described in section 3.3.

In general, high quality rocks include diabase, granite, gabbro, hard gneiss, basalt, andesite and greywacke and fair quality rocks include conglomerate, schist and limestone/dolomite. Poor quality rocks usually include argillite, chert, phyllite, slate, soft sandstone, and volcanic tuff. Some discrepancies were observed between this listing and the results of tests performed in this study, but can be explained by the excessive weathering and friability of some of the clasts (e.g. weathered granites).

Very often, the quality of aggregate within a deposit will be closely related to the underlying bedrock type. In areas where poorly indurated sedimentary and low grade metamorphic rocks occur, the materials are more likely to have a higher percentage of unsound lithotypes than areas where the deposits are underlain by intrusives and volcanic rocks.

(3) Alkali-reactivity:

Although no specific testing for alkali-reactivity was performed on the samples taken, it is generally known that certain lithotypes will react with the alkalis in portland cement, resulting in expansion and cracking of the concrete. Lithotypes which are potentially reactive include felsic extrusives, quartzite and chert.

The use of aggregate having high percentages of potentially reactive lithotypes is cautioned. In cases of suspected reactivity, the use of low-alkali portland cement or the partial substitution of fly-ash in place of portland cement serves as a solution to the problem (Swenson, 1973).

SELECTED REFERENCES

A.S.T.M.: American Society for Testing and Materials Annual Book of A.S.T.M. Standards (up-dated annually)

Bostock, H.S. 1970: Physiographic Regions of Canada. Geological Survey of Canada, Map 1254A.

Chalmers, L.C., 1884: Report on the surface geology of western New Brunswick with special reference to the area included in York and Carleton counties. Geological and Natural Survey of Canada, Report of Progress 1882-84, Section G.G. 47 p.

Cooper, A.J. 1981: Granular Aggregate Resources, Andover (NTS 21J/12) and Florenceville (NTS 21J/5). N.B. Department of Natural Resources, Mineral Resources Branch, Open File Report 81-2.

Finamore, P.F. 1981: Granular Aggregate Resources of the Woodstock and Millville map-areas, New Brunswick (NTS 21J/4 and 21J/3). N.B. Department of Natural Resources, Mineral Resources Branch, Open File Report 81-4.

Hamilton, J.B. 1973: Generalized Surficial Geology, illustrating the distribution of granular resources in New Brunswick. N.B. Department of Natural Resources, Mineral Resources Branch, Plate 73-14.

Hamilton, J.B. and Carroll, D.J.J. 1975: Sand and Gravel in New Brunswick. N.B. Department of Natural Resources, Mineral Resources Branch, Report of Investigation No. 16.

Lavergne, C. and Hunter, M. 1982: Granular Aggregate Resources of Newcastle (21I/13), Doaktown (21J/9) and McKendrick Lake (21J/16) New Brunswick. Open File Report 82-3; Plates 81-78, 81-79, 81-80.

Lee, H.A. 1962: Surficial Geology of Canterbury, Woodstock, Florenceville and Andover map-areas; York, Carleton and Victoria Counties, New Brunswick (parts of 21G/14, 21J/4, 21J/5 and 21J/12). Geological Survey of Canada, Paper 62-12, 8 p.

Mott, R.J. 1975: Postglacial history and environments in southwestern New Brunswick. Proceedings of the Nova Scotia Institute of Science, 27, Supplement 3, pp 67-82.

Potter, R.R., Hamilton, J.B. and Davies, J.L. 1978: Geological map of New Brunswick. Scale 1:500,000. Map N.R. 1, 1979 edition.

Rampton, V.N. and Paradis, S., 1981a: Quaternary Geology of the Woodstock map-area (21J), New Brunswick; N.B. Department of Natural Resources, Map Report 81-1.

---------- 1981b: Quaternary Geology of the Moncton map-area (21I), New Brunswick. N.B. Department of Natural Resources, Map Report 81-2.

Swenson, E.G. 1973: Alkali-expansivity of some concrete aggregate in Nova Scotia. Atlantic Industrial Research Institute.

APPENDIX 1

SAMPLE DESCRIPTIONS
of
COLDSTREAM (21 J/6), NAPADOGAN (21 J/7)
HAYESVILLE (21 J/10) and JUNIPER (21 J/11)

Note: Sample Location Number J6-39 was not utilized

* Subsequent review of the Lithological Analysis indicates there may be a confusion of fine grained lithotypes with Greywacke.

Location #: J6-01 County: York

Type of Deposit: Glaciofluvial terrace Parish: Douglas

Exposure Type: Gravel pit (Half Moon Pit) NTS: 21 J/6E

Status: Inactive UTM: 515495

Section Description & Comments:

0 - 5.0 m Materials are generally massive, moderately sorted cobbly pebbly sand. Clasts are subrounded and generally sound. An occasional weathered cobble was noted. Texture estimate: 10% cobbles, few boulders. This deposit varies laterally from being dominantly sand to that with a higher percentage of boulders.

5.0 - 10.0 m Lower older pit: abandoned. Numerous large boulders have been left from excavations.

About one-half the area of the upper pit has been excavated. The lower pit has been excavated to the water table.

D.O.T. (1968) suggests that the material is only suitable for borrow.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing		80.8	77.2	69.1	60.9	56.5	45.4	33.0	22.2	15.4	11.0

Lithologic Analysis:

Unsound Lithotypes (%) 22		Sound Lithotypes (%) 78	
Sedimentary	4	Acid Igneous	52
Acid Igneous	18	Sandstone	12
		Metasediment	10
		Basic Igneous *	4

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
50	12	5	300,000

Location #: J6-02

County: York

Type of Deposit: Ice-contact

Parish: Douglas

Exposure Type: Gravel pit

NTS: 21 J/6E

Status: Active on demand

UTM: 509495

Section Description & Comments:

Approximately 6 m of generally massive (with minor cross-bedding), poorly sorted ice-contact materials were observed in this pit. Texture ranged from sand to sandy cobble, gravel with cobbles representing 35-40% and boulders 5%. Clasts are subrounded to subangular.

The high cobble content necessitates crushing this material prior to use. At present there is a large stockpile of crushed material at the pit that is being used on a demand basis.

Additional reserves might be obtained from the area surrounding the described pit area. Currently it is being reforested.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis:

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
40	4	5	200,000

Location #: J6-03 | County: Carleton

Type of Deposit: Glaciofluvial terrace | Parish: Aberdeen

Exposure Type: Gravel pit | NTS: 21 J/6W

Status: Inactive | UTM: 216487

Section Description & Comments:

South Wall:

0 - 1.0 m Overburden: till-like.
1.0 - 2.0 m Exposed section consists of massive, poorly sorted cobbly gravelly sand. There appears to be a significant percentage of fines present. Clasts are subrounded and platey. Cobbles represent 5%.
2.0 - 4.0 m Slump covered to pit floor. Materials appear to be granular.

North Wall:

0 - 1.0 m Overburden: till-like.
1.0 - 1.1 m Layer of coarse sand, horizontally bedded and lensing out to the south.
1.1 - 2.5 m Exposed section consists of massive, poorly to moderately sorted cobbly gravelly sand. Cobbles represent 5 %. Clasts are sub-rounded to rounded and platey.
2.5 - 4.5 m Slump covered to pit floor. Materials appear to be granular.

(Con't on next page)

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing		See next page.									

Lithologic Analysis:

Unsound Lithotypes (%)	Sound Lithotypes (%)
See next page.	

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
	See next page.		

Location #: J6-03 Cont'd

County:

Type of Deposit:

Parish:

Exposure Type:

NTS:

Status:

UTM:

Section Description & Comments: Cont'd

At present the land behind the south and west walls of the pit is used as a hayfield and pasture. Size of the present pit area: 80 m x 120 m. There is very little material remaining behind the north wall of the pit.

D.O.T. data (1976) indicate a Los Angeles abrasion loss of 27 to 28% and that material can be recommended for borrow, subbase and marginal quality base course (35 mm crushed) aggregate.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	76.1	61.9	56.7	41.7	31.2	27.4	19.6	11.5	7.6	6.4	5.8
D.O.T. 1976	70		54	43	33	23		8			5.0
D.O.T. 1976	74		61	50	39	28		10			5.2

Lithologic Analysis:

Unsound Lithotypes (%) 44		Sound Lithotypes (%) 56	
Sedimentary	38	Basic Igneous	36
Metasediment	6	Metasediment	14
		Argillite	2
		Quartzite	4
		Breccia	2
		Andesite	2

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
16	4	3	100,000

Location #: J6-04

County: Carleton

Type of Deposit: Glaciofluvial terrace

Parish: Aberdeen

Exposure Type: Gravel pit

NTS: 21 J/6W

Status: Abandoned

UTM: 206486

Section Description & Comments:

0 - 0.5 m Overburden.
0.5 - 3.0 m Non-stratified, moderately-well sorted gravelly sand with few cobbles (5%). Materials are clean with very few fines.
3.0 - 4.0 m Poorly sorted cobbly gravels (up to 15% cobbles).
4.0 - 6.0 m Materials slump to pit floor.

Overall texture of deposit is gravelly sand to sandy gravel with cobbles 5-10%. No boulders were observed.

D.O.T. data (1959) indicate a Los Angeles abrasion loss of 28.6% and that the material can be recommended for borrow only.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	84.1	68.7	59.1	40.2	28.0	23.1	16.5	9.4	4.5	3.0	2.5
D.O.T. 1959		60.0	55.7		33.1			10.1			6.0
D.O.T. 1959		44.0	41.0		27.0			7.7			3.6

Lithologic Analysis:

Unsound Lithotypes (%) 4		Sound Lithotypes (%) 96	
Sedimentary	2	Basic Igneous *	56
Pumice	2	Metasediment	22
		Sandstone	12
		Acid Igneous	6

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
24	3	6.0	120,000

Location #: J6-05

County: Carleton

Type of Deposit: Glaciofluvial

Parish: Aberdeen

Exposure Type: Roadcut + old gravel pit

NTS: 21 J/6W

Status: Abandoned, overgrown

UTM: 193481

Section Description & Comments:

The deposit appears to be a sandy gravelly material. Clay coatings are common and impart a "dirtiness" to the materials. Most of the clasts are subrounded to rounded.

The backwall of the pit is approximately 9 m high and a utility line presently crosses the pit.

A hole was dug in the roadcut exposing cobbly sandy gravels. Relative position of the dug hole within the section is unknown. Cobbles represent 10-15%; occasional boulders were observed.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis:

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
10	.7	5-6	250,000

Location #: J6-06 County: Carleton

Type of Deposit: Glaciofluvial terrace Parish: Aberdeen

Exposure Type: Gravel pit NTS: 21 J/6W

Status: Active on demand UTM: 184487

Section Description & Comments:

0 - 1.0 m Overburden: topsoil

1.0 - 6.0 m Crudely stratified, moderately sorted sandy gravels dipping approximately 20° northeast. Clasts are subrounded. Cobbles represent 5-10%, occasional boulders are visible.

6.0 - 7.0 m Interbedded horizontal sands and dirty sandy cobble gravel. Cobbles are subangular to subrounded.

7.0 -14 m Moderately stratified, well sorted gravelly sands in an antiform structure (plunge 30° NE). Dip of beds vary on flanks of antiform. This structure has been cut unconformably by the above sand/cobble band. Clasts are rounded and subrounded. An occasional cobble is present.

These materials are considered to be the "best in the area for concrete aggregate." (Pers. Comm. with local residents).

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	92.6	88.9	83.8	66.9	49.2	28.1	14.9	2.4	0.8	0.8	0.8

Lithologic Analysis:

Unsound Lithotypes (%) 23				Sound Lithotypes (%) 77	
Metasediment	5	Quartzite	3	Metasediment	22
Sedimentary	9	Acid Igneous	2	Basic Igneous *	29
Chert	1			Acid Igneous	10
Greywacke	1			Sandstone	14
Volcanic	2			Andesite	1
				Quartzite	1

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
15	12	12-14	1,000,000

Location #: J6-07 **County:** Carleton

Type of Deposit: Glaciofluvial **Parish:** Kent

Exposure Type: Gravel pit **NTS:** 21 J/6W

Status: Active **UTM:** 150488

Section Description & Comments:

The materials forming this deposit exhibit considerable textural variability both laterally and vertically. Overall texture estimate: trace of fine silt), 80-85% sand, 10-15% pebbles, 5% cobbles, few boulders. Clasts are generally subrounded to rounded. Very few unsound clasts were observed. The height of the pit face is 12-14 m.

Generally the deposit can be divided into 5 units as follows with thicknesses of each unit indicated in parentheses:

Top I: (0 - 1.5 m) Overburden: till
II: (0 - 2.0 m) Finely bedded fine to medium sands with occasional pebbles. A boulder dropstone is present at the base of this unit.
III: (2.0 - 3.5 m) Cross-bedded medium to coarse sands, pebbly sands, sandy pebble gravel.
IV: (3.0 - 4.0 m) Poorly stratified to massive, poorly to moderately sorted gravelly sand, sandy gravels, and cobbly sandy gravel.
Base V: (4.0 - 5.0 m) Horizontally bedded, graded pebbly sands and sands capped by a 0.3 m lens of sandy silt.

(Cont'd next page)

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	92.7	81.1	64.6	47.0	33.9	26.3	13.7	8.7	1.8	0.7	0.6

Lithologic Analysis:

Unsound Lithotypes (%) 2		Sound Lithotypes (%) 98	
Sedimentary	2	Metasediment	11
		Sandstone	25
		Basic Igneous *	51
		Quartzite	5
		Felsic Extrusive	3
		Acid Igneous	3

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
10	9	12	800,000

Location #: J6-07 Cont'd

County:

Type of Deposit:

Parish:

Exposure Type:

NTS:

Status:

UTM:

Section Description & Comments: Cont'd

Boundaries between these members are not always distinct
The till capping is discontinuous over the underlying granular materials.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis:

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable

Location #: J6-08

County: Carleton

Type of Deposit: Glaciofluvial (deltaic)

Parish: Aberdeen

Exposure Type: Gravel pit

NTS: 21 J/6W

Status: Inactive

UTM: 211457

Section Description & Comments:

0 - 0.5 m Overburden: sandy till.
0.5 - 2.0 m Horizontal to slightly dipping sands.
2.0 - 5.0 m Moderately well stratified, moderately to well sorted gravelly sands and sandy gravels. These are occasionally interbedded with sand lenses. Materials dip 15-20° south-southeast. Within this gravelly unit there are bands, some up to 0.5 m thick, which are well-cemented together.

Total depth of the materials observed is approximately 10-12 m. This was estimated from an older lower excavation.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	92.1	74.7	64.1	41.7	28.1	20.6	14.1	9.2	4.4	1.7	1.2

Lithologic Analysis:

Unsound Lithotypes (%) 4		Sound Lithotypes (%) 96	
Sedimentary	4	Acid Igneous	6
		Metasediment	58
		Sandstone	18
		Basic Igneous *	14

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
10	6	10	300,000

Location #: J6-09 County: Carleton

Type of Deposit: Ice-contact Parish: Aberdeen

Exposure Type: Gravel pit NTS: 21 J/6W

Status: Abandoned UTM: 194434

Section Description & Comments:

0 - 0.5 m Overburden.
0.5 - 3.0 m Gravelly sand, poor to moderate sorting, massive. Clasts sub-rounded blade-like in shape.
3.0 - 8.0 m Slump covered: probably similar materials. Few cobbles on pit floor (up to 5%), one small boulder observed.

D.O.T. data (1977) indicate a Los Angeles abrasion loss of 30.5% and that the material can be recommended for borrow and subbase. According to the log of test holes, the deposit is erratic, recoverable reserves are limited.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	96.1	86.6	80.2	63.1	46.5	34.8	15.7	3.0	1.7	1.6	1.5
D.O.T. 1977	92		83	71	55	42		13			5.1

Lithologic Analysis:

Unsound Lithotypes (%) 22		Sound Lithotypes (%) 78	
Sandstone	2	Metasediment	28
Sedimentary	20	Basic Igneous *	22
		Sandstone	18
		Andesite	4
		Acid Igneous	4
		Quartz	2

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
9	Erratic deposit	8	Limited

Location #: J6-10

County: Carleton

Type of Deposit: Ice-contact

Parish: Peel

Exposure Type: Borrow pit (adjacent to house)

NTS: 21 J/6W

Status: Inactive

UTM: 171398

Section Description & Comments:

Approximately 4-5 m of poorly sorted, massive sandy, cobbly gravels are exposed in this excavation. Cobbles represent 15-20% of the deposit and are dominantly subangular to subrounded. Numerous clasts of unsound lithotypes, especially shale, are present.

The deposit appears to be an ice-contact (kame) terrace and may be related to the small tributary creek of Cold Stream.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
10	5	4-5	80,000

Location #: J6-11 County: Carleton

Type of Deposit: Glaciofluvial terrace Parish: Peel

Exposure Type: Borrow pit NTS: 21 J/6W

Status: Abandoned UTM: 175358

Section Description & Comments:

This is a small borrow pit, probably used locally in the past - now abandoned. The excavation is 3-4 m deep and slumped over. A small trench dug exposed about 1.6 m of gravelly sands overlying sand. Sorting was moderately good and clasts were subrounded.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
4.5	1	3	Minimal

Location #: J6-12 **County:** Carleton

Type of Deposit: Glaciofluvial (deltaic) **Parish:** Brighton

Exposure Type: Gravel pit **NTS:** 21 J/6W

Status: Abandoned * **UTM:** 185376

Section Description & Comments:

Approximately 20 m of gravelly sands are exposed (a large portion of the area is slumped over). Cobbles represent 10% of the deposit and a few boulders were observed. Clasts are generally subangular to subrounded; a significant percentage of unsound lithotypes (mainly shale and low-grade metamorphics) were observed.

We note that the laboratory analysis does not reflect these characteristics likely a result of the relative size of sample vs. pit face exposure. An outcrop of bedrock was observed on the pit slope and may be the reason that the pit was abandoned.

*An area on the southeast perimeter has been recently reworked and shows fairly clean pebble sands and sandy gravels.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	88.0	76.5	71.0	48.9	35.4	29.1	17.1	7.9	3.8	1.8	1.1

Lithologic Analysis:

Unsound Lithotypes (%) 6		Sound Lithotypes (%) 94	
Sedimentary	6	Metasediment	58
		Basic Igneous *	8
		Sandstone	22
		Metamorphic	4
		Volcanic	2

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
25	6	4-5	100,000

Location #: J6-12a | County: Carleton

Type of Deposit: Glaciofluvial (blanket) | Parish: Brighton

Exposure Type: Gravel pit | NTS: 21 J/6W

Status: Abandoned: depleted | UTM: 184379

Section Description & Comments:

A 12 m section of gravelly sand blanketing phyllitic bedrock is exposed in the pit face. Clasts are generally subangular to subrounded and have a significant percentage of unsound types.

The hillock that forms 50-60% of this deposit is likely cored by bedrock, thus reducing the reserves significantly.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
			Depleted

Location #: J6-13 County: Carleton

Type of Deposit: Glaciofluvial terrace Parish: Brighton

Exposure Type: Gravel pit NTS: 21 J/6W

Status: Active on demand UTM: 184403

Section Description & Comments:

Approximately 4 m of moderately well stratified pebbly sands are exposed in the west end wall of this gravel pit. Materials are clean and well sorted. Only 20 cm might be considered overburden. An occasional cobble occurs, large pebbles are not abundant. Clasts are subangular to subrounded and flat in shape.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: na/

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
50	25	4	1,000,000

Location #: J6-14

County: Carleton

Type of Deposit: Ice-contact? Ablation till? Parish: Peel

Exposure Type: Roadcut

NTS: 21 J/6W

Status: Undeveloped

UTM: 197433

Section Description & Comments:

Approximately 4 m of materials are exposed. Only 1.5-2.0 m is granular and contains a high proportion of fines. It is underlain by till-like material with a clay matrix and gravel coarse fraction. Cobbles and boulders: 5%.

Materials are poorly sorted and show no indication of stratification. General texture: gravelly silty sand. Clasts are subangular and of extremely variable lithology.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	79.7	68.4	57.7	33.7	19.6	13.4	8.5	5.6	4.2	3.9	3.7

Lithologic Analysis:

Unsound Lithotypes (%) 28		Sound Lithotypes (%) 72	
Sedimentary	22	Metasediment	24
Acid Igneous	2	Basic Igneous *	22
Sandstone	4	Sandstone	22
		Acid Igneous	2
		Andesite	2

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
		2	

Location #: J6-15

County: Carleton

Type of Deposit: Ice-contact: Kame terrace or blanket

Parish: Aberdeen

Exposure Type: Gravel pit

NTS: 21 J/6W

Status: Abandoned

UTM: 216436

Section Description & Comments:

Approximately 4 m of slumped gravelly sands are exposed in this abandoned pit. In a dug hole the materials are clean moderately well sorted pebbly coarse sands. Clasts are subrounded to rounded. Few cobbles are present: up to 5%. No boulders were observed.

The pit is 50 m x 30 m in area and materials may well extend to greater depth than 4 m. Reserves are calculated based on the minimum depth of materials.

D.O.T. data (1961) indicate a Los Angeles abrasion loss of 30.2% and that the material can be recommended for borrow and subbase. Some parts of this deposit are only suitable for borrow.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	93.2	82.0	76.2	62.9	55.1	46.9	27.5	7.6	1.8	1.1	0.9
D.O.T. 1961	87.0		80.7		55.2			15.2			4.3
D.O.T. 1961	86.0		74.2		43.3			20.2			12.5

Lithologic Analysis:

Unsound Lithotypes (%) 30		Sound Lithotypes (%) 70	
Sedimentary	24	Metasediment	34
Slate	4	Basic Igneous *	16
Basic Igneous *	2	Sandstone	10
		Acid Igneous	6
		Quartz	2
		Andesite	2

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
4	2	4	70,000

Location #: J6-16 County: Carleton

Type of Deposit: Ice-contact: kame terrace Parish: Brighton

Exposure Type: Gravel pit NTS: 21 J/6W

Status: Abandoned UTM: 222428

Section Description & Comments:

Approximately 6 m of poorly sorted, apparently non-stratified cobbly gravelly sand is visible in this pit. Clasts are dominantly sub-angular with minor subrounded in the smaller particle sizes. Shape is variable. In places a fine gravelly sand approximately 0.5 m thick caps the coarser underlying materials. Estimate: cobbles 10-15%, boulders - occasional.

The land back of the face has been stripped so overburden depth is unknown.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	84.9	66.7	58.3	37.4	25.2	19.9	10.2	2.8	1.0	0.7	0.68

Lithologic Analysis:

Unsound Lithotypes (%) 6		Sound Lithotypes (%) 94	
Siltstone	6	Basic Igneous*	18
		Metasediment	36
		Sandstone	32
		Siltstone	6
		Quartz	2

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
6	2.5	4	100,000

Location #: J6-17

County: Carleton

Type of Deposit: Glaciofluvial terrace

Parish: Brighton

Exposure Type: Gravel pit

NTS: 21 J/6W

Status: Active on demand

UTM: 219431

Section Description & Comments:

0 - 0.5 m Overburden: Fine sands and silts; thickness varies from 0.3-1.0 m.

0.5 - 5.0 m Moderately well sorted gravelly sands to pit floor although pockets of coarser material (like J6-16) occur. Clasts are subrounded and a few clay coatings were observed.

5.0 - 6.5 m In a lower level of the pit medium to coarse sands were observed overlying gravelly sands and sandy gravel. Horizontal and some minor cross-bedding were evident here.

General estimate: cobbles 5%, boulders-trace.

Adjacent to pit to the north is a cemetery; resources are thus limited.

D.O.T. data (1975) indicate a Los Angeles abrasion loss of 24.6 to 26.2% and that the material can be recommended for borrow and subbase aggregate.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing D.O.T. 1975	90		80	65	49	35		9			2.3

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
4	1	6.0	60,000

Location #: J6-18

County: Carleton

Type of Deposit: Alluvial terrace

Parish: Brighton

Exposure Type: Dug hole

NTS: 21 J/6W

Status: Undeveloped

UTM: 288371

Section Description & Comments:

Approximately 1 m of granular materials were exposed in this dug hole. The top 0.5 m are cobbly gravel, the clasts being subangular to subrounded. Below this capping is gravelly coarse sand which is well sorted; bedding is not apparent.

The terrace surface is approximately 3 m above present stream level. When the highway bridge crosses the creek, materials appear to get coarser downwards becoming dominantly gravelly cobbles. Stream bed is alternately gravel and bedrock.

At present, this terrace is being farmed, limiting reserves severely.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	96.7	89.9	85.9	70.7	49.7	35.7	13.1	5.2	3.4	2.3	1.7

Lithologic Analysis:

Unsound Lithotypes (%) 5		Sound Lithotypes (%) 95	
Metamorphics	2	Metasediment	40
Volcanics	3	Basic Igneous *	25
		Acid Igneous	15
		Sandstone	10
		Andesite	2
		Metamorphic	3

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
7	2	2	40,000

Location #: J6-19 County: Carleton

Type of Deposit: Glaciofluvial blanket Parish: Brighton

Exposure Type: Dug hole NTS: 21 J/6W

Status: Undeveloped UTM: 254376

Section Description & Comments:

Approximately 1 m of granular materials were exposed in this dug hole. Materials are not stratified (apparently) and are poorly to moderately sorted. Clasts are subangular to subrounded and often platey. Estimate: Cobbles 3%, fines 5%, no boulders observed. General texture is pebbly sand.

Along road about 50-100 m eastward appeared similar materials of up to 2.5 m in depth.

This small deposit is being farmed and is not now available as an aggregate reserve. Larger deposits in the vicinity make it unlikely that the materials here would come into demand.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
3	0	2	Nil

Location #: J6-20 County: Carleton

Type of Deposit: Ice-contact Parish: Brighton

Exposure Type: Roadcut NTS: 21 J/6W

Status: Undeveloped UTM: 253377

Section Description & Comments:

0 - 1.0 m Overburden: colluvial material from upslope.
1.0 - 2.0 m Sands overlying gravelly sands which coarsen with depth to cobble gravel. Sorting is moderate. Clasts subrounded.
2.0 - 6.0 m Slumped over, but large boulders, cobbles are exposed sticking out of cut. Near base of this there are numerous angular rocks possibly related to bedrock that is buried.

This deposit appears to form a bench (kame terrace) high above the present stream level.

Estimate: low proportion of fines, 10% cobbles, 5% boulders.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	96.3	87.8	82.4	63.7	45.6	29.3	18.3	11.3	5.4	3.6	3.1

Lithologic Analysis:

Unsound Lithotypes (%) 40		Sound Lithotypes (%) 60	
Sedimentary	28	Metasediment	40
Metasediment	12	Basic Igneous *	8
		Sandstone	10
		Acid Igneous	2

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
9	5	5-6	150,000

Location #: J6-21

County: Carleton

Type of Deposit: Colluvium (?)

Parish: Brighton

Exposure Type: Gravel pit

NTS: 21 J/6W

Status: Active on demand

UTM: 244384

Section Description & Comments:

About 12 m of moderate-well sorted fine gravels are exposed in this pit. Approximately 0.5-1.0 m from the top an almost continuous band of cobble gravel 5 cm to 0.6 m thick extends across the pit face.

There is good stratification developed in the fine gravels which dip approximately westward at increasing dip angles upslope. Downslope the dip approaches the horizontal. Within bedding layers there is a gradual textural change from coarse to fine upwards, repeated over and over again.

Texture is fine gravel with a matrix of fines binding it together. All particles are angular. A few boulders of angular rock were observed on the pit floor and occasional subrounded cobbles in situ on the pit face.

A cemetery lies immediately to the north of this pit thus limiting reserves.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing		98.4	95.1	75.9	44.1	23.3	14.5	12.2	10.6	8.1	5.7

Lithologic Analysis:

Unsound Lithotypes (%)	Sound Lithotypes (%) 100
	Silty sandstone 100

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
7.5	2.5	8	200,000

Location #: J6-21a (see also J6-21) County: Carleton

Type of Deposit: Colluvium (?) Parish: Brighton

Exposure Type: Gravel pit NTS: 21 J/6W

Status: Inactive UTM: 241391

Section Description & Comments:

Similar to J6-21: Fine angular gravels are exposed in the pit face which is approximately 10-12 m high.

The band of coarse (cobble gravel) angular fragments is much thicker here and does not have any finer materials overlying it. It varies in thickness from 0.5 m - 1.5 m thick.

An older pit is located to the south of this one and has similar materials only 3 m deep.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
10.5	3	7	200,000

Location #: J6-22 County: Carleton

Type of Deposit: Glaciofluvial blanket Parish: Brighton

Exposure Type: Roadcut NTS: 21 J/6W

Status: Undeveloped UTM: 222395

Section Description & Comments:

About 2.5 m of gravelly sand overlying bedrock is exposed here. Cobbles represent less than 5% of total; no boulders were observed. Clasts are subangular to subrounded and often elongate in shape. The granular materials thin away from the creek.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	97.0	79.2	70.8	51.1	36.0	24.6	13.0	4.5	1.6	1.1	0.9

Lithologic Analysis:

Unsound Lithotypes (%) 30		Sound Lithotypes (%) 70	
Sedimentary	20	Metasediment	36
Slate	4	Sandstone	18
Metasediment	2	Basic Igneous *	6
Acid Igneous	2	Acid Igneous	6
Sandstone	2	Andesite	2
		Quartz	2

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
10	2	1.5-2.0	25,000

Location #: J6-23 County: Carleton

Type of Deposit: Ice-contact (hummocky) Parish: Brighton

Exposure Type: Roadcut NTS: 21 J/6W

Status: Undeveloped UTM: 223376

Section Description & Comments:

An estimated depth of 3-4 m of dirty granular materials appear at this site. A dug hole revealed a very wet sandy gravel with dominant subangular clasts. Few cobbles were present and most fractured into smaller fragments.

The surface of this deposit is hummocky: possibly a kettle and kame situation or possibly ablation materials.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
12.5	7	3	160,000

Location #: J6-24

County: Carleton

Type of Deposit: Glaciofluvial

Parish: Brighton

Exposure Type: Gravel pit

NTS: 21 J/6W

Status: Inactive

UTM: 219340

Section Description & Comments:

Approximately 5 m of poorly stratified, poorly to moderately sorted sandy gravels are exposed here. Slumped material partially covers the lower 3 m of the section which may become finer (ie. gravelly sands) in part. Cobbles represent 5% of the material; no boulders were observed. Clasts are subrounded to rounded.

To the north side of the pit a gravelly sand is more predominant near the surface. This is capped by approximately 0.5 m overburden.

D.O.T. data (1962) indicate a Los Angeles abrasion loss of 30.7 to 32.5% and that the material can be recommended for borrow, subbase and base course aggregate.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	96.0	80.7	70.0	46.6	32.7	24.4	11.7	3.8	1.4	1.0	0.9
D.O.T. 1962	84.0		74.0		40.0			9.0			2.6
D.O.T. 1962	60.0		49.8		26.1			6.3			3.1

Lithologic Analysis:

Unsound Lithotypes (%) 28		Sound Lithotypes (%) 72	
Sedimentary	22	Metasediment	44
Acid Igneous	4	Basic Igneous *	18
Metasediment	2	Sandstone	8
		Andesite	2

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
300	200	4-5	5,000,000

Location #: J6-25 County: Carleton

Type of Deposit: Glaciofluvial Parish: Brighton

Exposure Type: Gravel pit NTS: 21 J/6W

Status: Abandoned UTM: 173325

Section Description & Comments:

This deposit is extremely variable in texture and morphology. Basically the unit is a fan deposit overlying and cutting through river gravels. The river gravels appear not to be extensive even though they are clean gravelly sands with 5-10% cobbles. The fan materials are poorly sorted, moderately stratified dirty gravels, gravelly sand, silty sand, cobbly gravels. Within this portion of the unit, cobbles 5%, boulders few, fines 5%. Clasts are generally subrounded to subangular.
Most of the gravel is coarse or approaching coarse sand size.
Depth of the deposit varies: average approximately 6-8 m.

D.O.T. data (1966) indicate a Los Angeles abrasion loss of 25.7% and that the material can be recommended for borrow, subbase and base course aggregate.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	86.5	69.0	59.3	37.6	22.7	14.8	4.6	1.9	1.6	1.5	1.4
D.O.T. 1966	80.0		61.0		36.5			9.7			3.2
D.O.T. 1966	84.0		62.1		39.9			14.1			2.4

Lithologic Analysis:

Unsound Lithotypes (%) 8		Sound Lithotypes (%) 92	
Sandstone	6	Metasediment	36
Conglomerate	2	Acid Igneous	8
		Basic Igneous*	32
		Sandstone	14
		Quartzite	2

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
4	1	6	50,000

Location #: J6-26

County: Carleton

Type of Deposit: Glaciofluvial terrace

Parish: Brighton

Exposure Type: Gravel pit

NTS: 21 J/6W

Status: Active on demand

UTM: 173338

Section Description & Comments:

Approximately 6 m of cobbly gravelly sands are exposed in this pit. Some crude horizontal stratification is present as well as some buried kettles and cross-bedding. The stratification is formed by members that are dominantly more sandy or more cobbly. Clasts are subrounded to round: most are competent. There are some fines present.

Estimated texture: up to 5% fines, 65% sand, 25% pebbles, 5 -10% cobbles, few boulders.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	69.2	55.5	47.6	34.1	23.6	13.3	5.9	2.5	1.4	1.1	1.0

Lithologic Analysis:

Unsound Lithotypes (%) 2		Sound Lithotypes (%) 98	
Sedimentary	2	Metasediment	54
		Basic Igneous*	28
		Sandstone	16

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
7	3	5	150,000

Location #: J6-27 County: Carleton

Type of Deposit: Glaciofluvial Parish: Brighton

Exposure Type: Roadcut, dug hole NTS: 21 J/6W

Status: Undeveloped UTM: 237339

Section Description & Comments:

0 - 1.0 m	Gravelly sandy material - has been turned over in past.
1.0 - 1.5 m	Medium sand with occasional clay pockets and occasional dropstone
1.5 - 2.0 m	Gravelly sand, moderate-well sorted, clasts subrounded, stratification not apparent.
2.0 - 5.0 m	Slump covered roadside. There may be some larger clasts (cobbles) in this section as well as buried bedrock as both occur as float on the surface.

The deposit is currently a pasture which might severely limit reserves depending of availability of land use permits.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
6	4	3	120,000

Location #: J6-28

County: Carleton

Type of Deposit: Glaciofluvial terrace

Parish: Brighton

Exposure Type: Gravel pit

NTS: 21 J/6W

Status: Inactive

UTM: 239350

Section Description & Comments:

This pit is excavated into the scarp of the glaciofluvial terrace. Estimated height of the pit face is 16-20 m; estimated height of the scarp is 30 m. Granular materials apparently extend through the entire thickness. Texture throughout is variable though not extreme. Near the base of the pit sandier materials predominate. Materials become coarser (dominantly sandy gravels) near the top of the pit face. Above on the partially cleared scarp there is a mixture of gravels and sands. Cobbles represent 3-5% and are small. Fines occur in low proportion. Overall, sands are more dominant (60-65%) and gravels subordinate (25-30%). Occasional boulders were observed. Clasts are subangular to subrounded and up to 7-10% are weathered or break apart easily.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	89.5	81.7	74.8	56.7	42.1	39.1	29.2	13.6	4.7	2.9	2.5

Lithologic Analysis:

Unsound Lithotypes (%) 34		Sound Lithotypes (%) 66	
Metasediment	8	Sandstone	34
Sandstone	4	Siltstone	8
Sedimentary	22	Metasediment	16
		Basic Igneous *	6
		Acid Igneous	2

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
20	12	25-30	3,000,000

Location #: J6-29 County: Carleton

Type of Deposit: Ice-contact Parish: Brighton

Exposure Type: Ditch NTS: 21 J/6W

Status: Undeveloped UTM: 253373

Section Description & Comments:

Approximately 1 m of dirty gravels were exposed in this cut. Sands are subordinate to the rounded clay-coated gravels. Cobbles were observed but no estimate of percentage was made. No stratification is evident and thickness of deposit not estimable. Further southwest along roadside, this deposit appears to be partially covered with colluvium.

No reserves have been estimated as material thickness is unknown.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable

Location #: J6-30

County: Carleton

Type of Deposit: Ice-contact (kames?)

Parish: Brighton

Exposure Type: Borrow pit

NTS: 21 J/6W

Status: Abandoned

UTM: 246340

Section Description & Comments:

A small kame complex: gravelly sand with low proportion of cobbles. Clasts are subrounded to rounded and fairly clean. Sorting is moderate to good. Thickness varies from 2.5 m to 5 m.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	94.0	79.7	75.0	64.2	54.2	52.9	39.1	15.4	4.6	2.7	2.1

Lithologic Analysis:

Unsound Lithotypes (%) 12		Sound Lithotypes (%) 88	
Sandstone	10	Basic Igneous*	8
Conglomerate	2	Metasediment	35
		Sandstone	45

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
3	2	3	60,000

Location #: J6-31 County: Carleton

Type of Deposit: Glaciofluvial Parish: Brighton

Exposure Type: Borrow pit NTS: 21 J/6W

Status: Active on demand. UTM: 248330

Section Description & Comments:

0 - 0.1 m	Overburden.
0.1 - 0.3 m	Fine (pebble) gravel with few clay coatings.
0.3 - 1.0 m	Gravelly sand: moderately well sorted rounded particles, few cobbles. Sampled zone.
1.0 - 5.0 m	Slumped over gravelly sands apparently grading downwards to almost pure sand.

D.O.T. data (1960) indicate a Los Angeles abrasion loss of 27.6% and that the material can be recommended for borrow, subbase and base course aggregate.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	88.0	72.3	64.9	50.4	37.2	25.5	11.7	3.2	0.7	0.67	0.67
D.O.T. 1960	92.0		76.2		38.3			6.0			2.1

Lithologic Analysis:

Unsound Lithotypes (%) 2		Sound Lithotypes (%) 98	
Sedimentary	2	Sandstone	52
		Metasediment	26
		Basic Igneous *	14
		Siltstone	6

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
3	1.5	5	75,000

Location #: J6-32 County: Carleton

Type of Deposit: Glaciofluvial fan (delta) Parish: Brighton

Exposure Type: Borrow pit NTS: 21 J/6W

Status: Inactive UTM: 207318

Section Description & Comments:

This small pit shows typical deltaic gravels, gravelly sands and sands with foreset and topset beds discontinuously overlying horizontal fine sand and silt. The deltaic materials range in thickness from 4 to 6 m.

Average texture estimate (from above horizontal bottom beds): trace of fines, 65% sand, 30% pebbles, up to 5% cobbles; no boulders observed.

The materials of this deposit are thought to thin southwards (upstream).

Sample was taken from cobbly sandy gravels which comprised about 1/3 of the section.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	91.5	74.6	62.8	33.9	17.5	8.3	2.6	1.1	0.9	0.8	0.7

Lithologic Analysis:

Unsound Lithotypes (%) 4		Sound Lithotypes (%) 96	
Sandstone	4	Basic Igneous *	40
		Metasediment	22
		Sandstone	24
		Acid Igneous	8
		Andesite	2

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
10	3	4	100,000

Location #: J6-33 County: Carleton

Type of Deposit: Ice-contact Parish: Brighton

Exposure Type: Gravel pit NTS: 21 J/6W

Status: Active on demand UTM: 157293

Section Description & Comments:

0 - 0.5 m Overburden.
0.5 - 1.0 m Clean medium sand.
1.0 - 4.5 m Very dirty granular poorly sorted, non-stratified materials. Clasts are subangular to subrounded and of various shapes. Fines coat all the particles. Texture is generally a silty gravelly sand. Estimate: 0% fines, 65% sand, 25% pebbles, less than 5% cobbles, occasional boulder.

Clay lumps were present at all depths. Seepage occurs.

Further down the access road to the northwest about 0.5 km there is another small pit which has cleaner materials, again approximately 3-5 m thick, with less (0.2 m) overburden. Texture estimate: up to 5% fines, 65% sand, 25-30% pebbles, less than 5% cobbles, occasional boulder.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	88.3	82.6	78.4	63.2	47.6	37.3	22.0	11.1	7.6	6.8	6.3

Lithologic Analysis:

Unsound Lithotypes (%) 16		Sound Lithotypes (%) 84	
Sandstone	6	Sandstone	26
Volcanic	4	Metasediment	26
Metasediment	4	Basic Igneous*	22
Sedimentary	2	Siltstone	6
		Acid Igneous	4

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
9	5	4	120,000

Location #: J6-34

County: Carleton

Type of Deposit: Glaciofluvial terrace

Parish: Brighton

Exposure Type: Gravel pit

NTS: 21 J/6W

Status: Inactive

UTM: 175319

Section Description & Comments:

Back Wall:

0 - 1.0 m	Overburden: pebbly clay.
1.0 - 5.5 m	Pebbly sand. Horizontally stratified with slight cross-bedding evident in a few places. Some minor sand and fines occur in lenses within this portion of the section. Clasts are round, materials are well-sorted.
5.5 - 6.0 m	Medium to fine sand, horizontally and cross-bedded, well sorted. This band appears to be discontinuous around the entire pit.
6.0 - 10.0 m	Dirty gravelly sands. Poor stratification with poor to moderate sorting. Clasts are subangular to subrounded. Estimate 5% fines, less than 5% cobbles.

Side Wall:

This part of the deposit thins to 5-8 m thickness. From 0-1.5 m cobbly gravelly sands are evident; there is no apparent overburden. Sorting is poor and clasts are mostly subangular to subrounded. Cobble content is higher (10-15%). Stratification is wavy.

(Con't next page)

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing A	84.9	72.7	63.4	44.3	28.2	22.6	17.7	15.0	13.0	9.9	8.0
B	98.4	91.9	86.7	68.3	54.2	45.3	31.0	14.1	4.9	3.6	3.5

Lithologic Analysis:

Unsound Lithotypes (%)	A	B	Sound Lithotypes (%)	A	B
Sedimentary	20	10	Metasediment	30	20
Sandstone	-	8	Basic Igneous *	28	20
Metasediment	-	2	Sandstone	14	38
Basic Igneous *	2	-	Felsite	6	-
			Acid Igneous	-	2

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
21	4.5	7	250,000

Location #: J6-34 Continued

County:

Type of Deposit:

Parish:

Exposure Type:

NTS:

Status:

UTM:

Section Description & Comments:

Adjacent pit:

It is located immediately to the northwest of the above described pit. Exposes cobbly gravelly sands 3-6 m thick capped by 0.5 m fines and find sand (overburden). Materials in this pit appear cleaner with different percentages of clast sizes. Estimate: few fines, 65% sand, 30-35% pebbles, 5-10% cobbles, several large boulders.

Sample J6-34A taken from 6.0 - 7.5 m
Sample J6-34B taken from 2.0 - 3.0 m

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis:

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable

Location #: J6-35 County: Carleton

Type of Deposit: Alluvial terrace Parish: Brighton

Exposure Type: Dug hole NTS: 21 J/6W

Status: Undeveloped UTM: 263298

Section Description & Comments:

Approximately 1 m of gravelly sand was exposed in this hole. No overburden or fine veneer was present. Materials were not stratified and were moderate-well sorted. Low proportion of cobbles were present. Clasts were subrounded to round.

The terrace is approximately 3 m above present stream level. In various portions of this alluvial terrace/plain complex there may be fine sandy veneers. Lower levels may encounter the water table thus limiting excavation depths. Much of this terrace is being farmed and some is used for woodcutting. Other alluvial terraces along the Becaguimec River may provide additional reserves of granular aggregate, but again conflicting land uses and high water table may present problems.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
175	150	2	3,000,000

Location #: J6-36 County: Carleton

Type of Deposit: Glaciofluvial terrace Parish: Brighton

Exposure Type: Gravel pit NTS: 21 J/6W

Status: Active on demand UTM: 280302

Section Description & Comments:

0 - 0.1 m Overburden.

0.1 - 1.0 m Horizontal, poorly sorted cobbly gravelly sands with angular to subangular clasts as well some rounded ones. One boulder observed, cobbles 5-10%.

10. - 6.0 m Crudely stratified, poorly to moderately sorted gravelly sands. Beds dip 18-20° west southwest and occasionally cut each other. There are some sand lenses within this unit, generally 10 cm wide; elsewhere in the section beds are of pebble gravel.

Overall texture estimate: less than 5%, 55-60% sand, 35-40% pebbles, less than 5% cobbles, trace boulders.

D.O.T. data (1960) indicate a Los Angeles abrasion loss of 31 to 33.8%.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	92.6	85.1	76.3	51.2	28.6	13.4	4.9	2.2	1.5	1.3	1.3
D.O.T. 1960	83.0		76.5		47.7			15.7			3.4
D.O.T. 1960	92.0		75.9		45.3			10.4			3.2

Lithologic Analysis:

Unsound Lithotypes (%) 26		Sound Lithotypes (%) 74	
Sedimentary	12	Siltstone	38
Sandstone	12	Sandstone	20
Conglomerate	2	Metasediment	12
		Acid Igneous	2
		Basic Igneous*	2

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
50	25	6	1,500,000

Location #: J6-37 County: Carleton

Type of Deposit: Esker Parish: Brighton

Exposure Type: Sand pit NTS: 21 J/6W

Status: Abandoned UTM: 270272

Section Description & Comments:

Approximately 8 m (at crest) of well sorted, non-stratified materials were observed. Texture estimate: 95% sands, up to 5% pebbles, occasional cobble and boulder. There seems to be a slight increase in clast size downwards and laterally towards the flanks.

An outcrop of very weathered bedrock is exposed at the southwest end of the esker. Rock type: pebble conglomerate.

Approximately two-thirds of the esker has been exploited. The base of the pit is swampy.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
4	1.5	6	75,000

Location #: J6-38 County: Carleton

Type of Deposit: Glaciofluvial veneer over weathered bedrock Parish: Brighton

Exposure Type: Quarry NTS: 21 J/6W

Status: Abandoned UTM: 285243

Section Description & Comments:

0 - 0.5 m Granular materials (glaciofluvial veneer)
0.5 - 2.5 m Weathered coarse sandstone and pebble conglomerate.

Overall "texture" of deposit is coarse sand with minor pebbles and fewer cobbles (total pebbles and cobbles 5-10%).

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable

Location #: J6-40

County: Carleton

Type of Deposit: Glaciofluvial terrace

Parish: Aberdeen

Exposure Type: Borrow pit

NTS: 21 J/6W

Status: Abandoned

UTM: 315486

Section Description & Comments:

Approximately 5 m of poorly exposed dirty cobbly gravelly sands can be seen here. Sorting is poor to moderate. No stratification is evident, but there is a suggestion of clast imbrication. Estimate 5% fines, 10% cobbles, few boulders. Most clasts are subrounded to subangular; some are platey and break apart easily.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
1.5	1	4-5	40,000

Location #: J6-41 County: Carleton

Type of Deposit: Glaciofluvial terrace Parish: Brighton

Exposure Type: Borrow pit NTS: 21 J/6W

Status: Abandoned UTM: 396423

Section Description & Comments:

Approximately 2 m of gravelly sand is exposed in this pit. Sorting is moderate except for 0.5 - 0.9 m where it is poor to moderate. In this portion less than 5% cobbles are present; none were observed throughout the rest of the section. There is a suggestion of decrease in size grading downwards in the deposit. No stratification was observed. Clasts are subangular to subrounded.

Materials between 0.8 and 1.0 m are quite compact. This may be due to iron oxide cementation.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis:

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
18	12	2	200,000

Location #: J6-42 County: York

Type of Deposit: Glaciofluvial: kettled Parish: Douglas

Exposure Type: Borrow pit NTS: 21 J/6W

Status: Inactive UTM: 416408

Section Description & Comments:

Approximately 4 m of poorly sorted, non-stratified materials are exposed. Occasional pockets of fine sands and silts are present as well as other areas with boulder concentrations. Clasts are subangular and dominantly granitic. Texture is extremely variable. Estimate of average texture: trace of fines, 60% sand, 25-30% gravel, 5-10% cobbles, 5% boulders.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	86.8	76.8	71.2	60.4	50.1	40.5	24.0	10.7	4.1	2.1	1.7

Lithologic Analysis:

Unsound Lithotypes (%)		Sound Lithotypes (%)	
Sedimentary	6	Acid Igneous	40
Acid Igneous	4	Basic Igneous*	22
Chert	2	Metasediment	16
		Andesite	6
		Sandstone	4

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
20	15	3	400,000

Location #: J6-43 County: Carleton

Type of Deposit: Glaciofluvial Parish: Brighton

Exposure Type: Gravel pit NTS: 21 J/6W

Status: Inactive UTM: 157257

Section Description & Comments:

0 - 0.5 m	Overburden. Horizontally bedded fines and fine sand with Brunisolic soil development.
0.5 - 1.8 m	Poorly sorted, crudely cross-bedded, dirty cobbly gravelly sand. Clasts are subangular to subrounded.
1.8 - 3.0 m	Moderately sorted, cross-bedded, pebbly sand. Some lenses of pebbles or sand occur. Clasts are subrounded to round.
3.0 - 4.0 m	Slump covered: granular materials.

D.O.T. data (1974) indicate a Los Angeles abrasion loss of 22.9 to 24.4% and that the material can be recommended for borrow and pit run subbase.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	94.5	87.2	81.0	72.6	61.1	52.1	38.5	22.6	9.6	4.8	3.7
D.O.T. 1974	94.0		85.0	73.0	61.0	47.0		15.0			3.7
D.O.T. 1974	86.0		69.0	52.0	40.0	31.0		14.0			5.1

Lithologic Analysis:

Unsound Lithotypes (%) 22		Sound Lithotypes (%) 78	
Sedimentary	16	Sandstone	30
Metasediment	4	Basic Igneous *	18
Quartzite	2	Metasediment	14
		Siltstone	10
		Acid Igneous	4
		Felsic Extrusive	2

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
12	4	3.0	100,000

Location #: J6-44

Type of Deposit: Esker

Exposure Type: Gravel pit

Status: Active

County: York

Parish: Douglas

NTS: 21 J/6E

UTM: 524274

Section Description & Comments:

This gravel pit exposes a full cross-section of the esker. Pit floor to crest is approximately 10 m, width at base approximately 30-35 m. Thickness decreases at both ends.

Materials are poorly to moderately sorted gravelly sands with poor but typical antiform stratification. Some bands are finer (silty sands, pebbly sands); others are coarser (pebbles, gravel, dirty cobble gravel). One large boulder was observed at the edge of the pit. Cobbles represent 5-10% of the total. Clasts are subrounded and are dominantly granitic or high grade metamorphics.

Approximately three quarters of materials in this esker have been used.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	85.9	71.9	62.4	39.2	25.5	22.8	20.2	16.7	11.1	7.4	5.0

Lithologic Analysis:

Unsound Lithotypes (%)	Sound Lithotypes (%) 100%
	Basic Igneous * 62
	Metasediment 20
	Acid Igneous 12
	Sandstone 6

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
5	1.5	5	75,000

Location #: J6-45 County: York

Type of Deposit: Ablation till Parish: Douglas

Exposure Type: Roadcut NTS: 21 J/6E

Status: Undeveloped UTM: 521240

Section Description & Comments:

Approximately 4 m of bouldery sand is exposed in this roadcut. Materials in the fine fraction are well sorted (pebbly) sands. No stratification is evident. The boulders are subrounded and dominantly granitic. The sand is of quartz-feldspar lithology. Texture estimate (coarse fraction): few cobbles, up to 5% boulders.

This area north to the Nashwaak River appears to be mantled by ablation till. No attempt was made to define unit boundaries.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
		3-4	

Location #: J6-46

County: York

Type of Deposit: Ice-contact

Parish: Douglas

Exposure Type: Borrow pit

NTS: 21 J/6E

Status: Abandoned: overgrown

UTM: 503291

Section Description & Comments:

Approximately 6 m of poorly stratified silty gravelly sands are exposed in this cut. Stratification was most evident in the upper 3 m; below is mostly slumped over. Clasts are subangular to subrounded and very poorly sorted. Textures range from small bands of clayey silt and silty sandy gravel to bouldery sand. Overall texture estimate: 15% fines, 40% sands, 30% pebbles, 5-10% cobbles, small proportion of boulders.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	78.3	65.7	61.0	49.6	36.9	34.0	26.9	18.9	13.3	10.5	8.2

Lithologic Analysis:

Unsound Lithotypes (%) 2		Sound Lithotypes (%) 98	
Acid Igneous	2	Basic Igneous *	76
		Acid Igneous	12
		Metasediment	8
		Quartzite	2

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
100	30	4	1,200,000

Location #: J6-47 County: York

Type of Deposit: Glaciofluvial outwash Parish: Douglas

Exposure Type: Sand pit NTS: 21 J/6E

Status: Inactive UTM: 483289

Section Description & Comments:

Approximately 4 m of medium-coarse sand is exposed here. Materials are generally very well sorted; occasional pockets of gravelly sands do occur and boulders are present. Coarser materials, where present, are subangular to subrounded and are of plutonic lithology. Texture estimate: 90-95% sands, low proportion of pebbles, cobbles, and boulders.

The materials from this pit have been used to resurface the upper Nashwaak River road, however reference to this could not be found in the D.O.T. data reveiwed.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
64	40	3	1,000,000

Location #: J6-48 County: York

Type of Deposit: Glaciofluvial terrace Parish: Douglas

Exposure Type: Borrow pit NTS: 21 J/6E

Status: Inactive UTM: 465310

Section Description & Comments:

Approximately 2.5 m of gravelly cobbly sands are exposed in this borrow site. Sorting is moderate; no stratification is evident. Clasts are subangular to subrounded and dominantly of competent plutonic rock.

No boulders were observed; however, cobbles represent 40% of the deposit, pebbles 20%, sand 40%. Trace of fines were observed.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	67.5	56.9	50.1	37.9	29.9	23.6	16.0	11.2	5.5	2.9	2.1

Lithologic Analysis:

Unsound Lithotypes (%) 20		Sound Lithotypes (%) 80	
Acid Igneous	14	Basic Igneous*	42
Sandstone	6	Acid Igneous	26
		Metasediment	6
		Sandstone	4
		Quartzite	2

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
36	20	2.5	500,000

Location #: J6-49 County: York

Type of Deposit: Glaciofluvial terrace Parish: Douglas

Exposure Type: Borrow pit NTS: 21 J/6E

Status: Active on demand UTM: 438318

Section Description & Comments:

Approximately 2.5-3.0 m of cross-bedded sands, gravelly sands and cobbly gravelly sands are exposed in this cut. Sands dominate. Sorting is moderate to good depending on which layer is observed. Beds vary from 5-7 cm to greater than 50 cm in thickness. Clasts are subangular to subrounded and are of competent granitic rock.

Texture estimate: cobbles 5%, pebbles 15%, sand 80%, no boulders or fines were observed.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
25	15	3.0	400,000

Location #: J6-50 County: York

Type of Deposit: Glaciofluvial terrace Parish: Douglas

Exposure Type: Borrow pit and roadcut NTS: 21 J/6E

Status: Inactive-active on demand UTM: 422323

Section Description & Comments:

Approximately 3-4 m of gravelly sands are exposed in this cut. Materials are moderate to well sorted and tend to be coarser near the terrace surface and become more sandy downwards. Several large boulders were observed on the pit floor. Clasts are generally subangular to subrounded and of mixed lithologies; high grade metamorphics and plutonics are predominant. Clasts generally appear sound. Texture estimate: 75-80% sand, 15% pebbles, 5-10% cobbles, occasional boulders.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	86.6	75.6	69.9	58.8	47.7	41.9	18.3	5.2	1.3	1.0	0.9

Lithologic Analysis:

Unsound Lithotypes (%) 22		Sound Lithotypes (%) 78	
Acid Igneous	20	Basic Igneous *	16
Sedimentary	2	Metasediment	16
		Sandstone	24
		Acid Igneous	22

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
35	20	3	500,000

Location #: J6-51 County: York

Type of Deposit: Glaciofluvial terrace Parish: Douglas

Exposure Type: Borrow pit NTS: 21 J/6E

Status: Abandoned UTM: 415344

Section Description & Comments:

Approximately 3-4 m of medium-coarse sand is exposed in this cut. Occasional pebbles, cobbles and boulders were observed. Larger clasts are subangular to subrounded; coarse sand is angular. No apparent stratification is present. Sand is dominantly quartz and feldspar.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
35	15	3-4	350,000

Location #: J6-52 **County:** York

Type of Deposit: Glaciofluvial terrace **Parish:** Douglas

Exposure Type: Borrow pit **NTS:** 21 J/6E

Status: Abandoned **UTM:** 416381

Section Description & Comments:

Approximately 4 m of gravelly sands are exposed here. A cobbly gravel capping of 0.5 m is present. Occasional cobbles are present throughout. Materials are generally well sorted and larger clasts are subrounded. No stratification was observed. Texture estimate: 75-80% sands, 20% pebbles, up to 5% cobbles, occasional small boulders.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	92.9	87.8	83.7	75.8	62.9	44.4	19.8	5.5	1.7	1.0	0.8

Lithologic Analysis:

Unsound Lithotypes (%) 18		Sound Lithotypes (%) 82	
Acid Igneous	18	Basic Igneous*	28
		Metasediment	20
		Acid Igneous	16
		Sandstone	16
		Andesite	2

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
24	12	4	400,000

Location #: J6-53 County: York

Type of Deposit: Weathered bedrock Parish: Douglas

Exposure Type: Roadcut and dug hole NTS: 21 J/6E

Status: Undeveloped UTM: 434435

Section Description & Comments:

0 - 0.2 m Soil development.
0.2 - 0.8 m Coarse sand derived from weathered granite. Soundness increases with depth.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
		Less than 1	

Location #: J6-54 County: York

Type of Deposit: Weathered bedrock Parish: Douglas

Exposure Type: Borrow quarry NTS: 21 J/6E

Status: Inactive UTM: 435447

Section Description & Comments:

0 - 0.5 m Coarse sand and fine pebbles of quartz and feldspar.
0.5 - 1.5 m Weathered granitic bedrock. Easily excavated.

Several large boulders and some cobbles are scattered around the quarry. These are likely derived from a local till veneer.

Approximately 200 m north along the road is another borrow quarry showing similar characteristics. The till veneer is more obvious here in that there are 5% angular to subangular cobbles and occasional boulders in a coarse sand matrix overlying the weathered bedrock.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	97.5	94.5	94.0	89.2	69.8	40.4	18.8	7.6	3.1	1.8	1.3

Lithologic Analysis:

Unsound Lithotypes (%)		Sound Lithotypes (%)
Acid Igneous	100	

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
		1.5	

Location #: J6-55 County: York

Type of Deposit: Ablation till; weathered bedrock Parish: Douglas

Exposure Type: Borrow pit/quarry NTS: 21 J/6E

Status: Abandoned UTM: 492458

Section Description & Comments:

0 - 2.0 m Bouldery sandy till. Contains 5% gravel and less than 5% cobbles in a coarse sandy matrix with a trace of fines. Very large boulders are scattered around the area. Lithologies are dominantly granitic with foliated gneiss subordinate.

2.0 - 3.0 m Weathered granitic bedrock.

The sandy till and weathered bedrock have both been utilized for logging road construction in this area.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
		2-3	

Location #: J6-56 County: York

Type of Deposit: Glaciofluvial outwash Parish: Douglas

Exposure Type: Roadcut NTS: 21 J/6E

Status: Undeveloped UTM: 522487

Section Description & Comments:

Approximately 3.5 m of gravelly sand is exposed here. Materials are well-sorted and apparently exhibit no stratification. Texture estimate: pebbles 20%, cobbles 5-10%; two boulders were observed. Clasts are subangular to subrounded and of granitic and gneissic lithology. Both appear sound. A few weathered clasts were observed but were not common.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	95.0	90.0	85.7	75.6	66.2	53.8	30.0	9.0	1.8	0.9	--

Lithologic Analysis:

Unsound Lithotypes (%) 52		Sound Lithotypes (%) 48	
Acid Igneous	44	Acid Igneous	26
Sandstone	6	Sandstone	10
Conglomerate	2	Metasediment	10
		Basic Igneous*	2

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
See J6-01		3	

Location #: J6-57

County: York

Type of Deposit: Glaciofluvial

Parish: Douglas

Exposure Type: Borrow pit

NTS: 21 J/6E

Status: Abandoned

UTM: 531474

Section Description & Comments:

Approximately 4 m of cobbly gravelly sand is exposed here. Materials are moderately well sorted and exhibit no apparent stratification. Clasts are subrounded and of generally sound lithology.

This appears coarser than J6-56. Texture estimate: boulders-trace, cobbles 10-15%, pebbles 30%, sand 50-55%.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
6	3	4	100,000

Location #: J6-58 County: York

Type of Deposit: Glaciofluvial blanket Parish: Douglas

Exposure Type: Gravel pit NTS: 21 J/6E

Status: Abandoned UTM: 539340

Section Description & Comments:

Approximately 3 m of gravelly cobbly sand is exposed at the end of the pit. The materials are poorly to moderately sorted and are apparently massive. No stratification was observed. Clasts are subrounded to rounded, although some broken angular fragments are also present. Estimated texture: 50% sand, 25% pebbles, 25% cobbles, few boulders.

The pit is in the terrace just above the present floodplain. There is 1 m of water in the pit at present.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
5	2.5	3	60,000

Location #: J6-59 County: York

Type of Deposit: Ice-contact Parish: Douglas

Exposure Type: Borrow site and roadcut NTS: 21 J/6E

Status: Abandoned UTM: 534337

Section Description & Comments:

Approximately 7-8 m of ice-contact materials are visible here. The roadcut is 5-6 m high and 2 m has been taken off the upper surface. Materials are poorly sorted and massive. Clasts are angular to subrounded but sound. Texture is variable throughout the deposit; pockets of various sizes exist as well as homogeneous mixtures of all sizes. Texture estimate: 10% fines, 40% sand, 40% pebbles, 10% cobbles, few boulders.

Bedrock may underlie this deposit, thus the average thickness may not be as much as indicated by the present exposure.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	90.7	84.0	79.6	68.1	58.1	56.2	50.5	41.8	32.4	23.3	17.2

Lithologic Analysis:

Unsound Lithotypes (%)	Sound Lithotypes (%) 100

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
12	8	3	250,000

Location #: J6-60

County: York

Type of Deposit: Glaciofluvial

Parish: Douglas

Exposure Type: Borrow pit

NTS: 21 J/6E

Status: Abandoned

UTM: 523283

Section Description & Comments:

Approximately 1 m of sand overlies gravelly sands. The materials are moderately-well sorted with the exception of a few cobbles at 1 m depth. The materials are stratified. Clasts are subrounded and generally sound.

Texture of the coarser lower horizon is: less than 5% cobbles, pebbles 30%, sand 65-70%. The upper horizon consists of medium sand.

This site has seen several uses: gravel pit, sawmill, stockpile area, and meteorological station (at present).

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
6	1.5	2	25,000

Location #: J6-61 County: York

Type of Deposit: Esker Parish: Douglas

Exposure Type: Borrow pit NTS: 21 J/6E

Status: Abandoned UTM: 532310

Section Description & Comments:

Approximately 1.5 m gravelly sands overlie sands in this esker. Stratification is not evident. There is a suggestion of clast imbrication. Clasts are subrounded and generally sound.

The exposed section is 3.5 m high at the crest and 15-20 m across at the base. Estimated textures follow.

0 - 1.5 m Sand 45%, pebbles 50%, cobbles less than 5%, few boulders.
1.5 - 2.5 m Sand 95%, pebbles less than 5%
2.5 - 3.5 m Slump covered: granular materials.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	84.6	75.9	70.6	59.4	51.9	46.1	31.1	10.1	1.7	0.9	0.7

Lithologic Analysis:

Unsound Lithotypes (%)	8	Sound Lithotypes (%)	92
Acid Igneous	4	Basic Igneous*	44
Sedimentary	4	Sandstone	14
		Metasediment	10
		Acid Igneous	
		Quartz	8
		Quartzite	6

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
6	5	2.0	100,000

Location #: J6-62 **County:** York

Type of Deposit: Alluvial terrace **Parish:** Douglas

Exposure Type: Gravel pit **NTS:** 21 J/6E (see also 21 J/11E)

Status: Abandoned **UTM:** 492512

Section Description & Comments:

Approximately 2 m moderate-well sorted, non-stratified gravelly sands and sandy gravels are exposed in this old pit. Clasts are rounded to subrounded and sound. No cobbles or boulders were observed. Estimated texture: pebbles 45-55%, sand 45-55%. Water is present on the floor. Currently the pit is used as a dump site for waste slash.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	83.9	68.3	59.5	44.1	37.4	N.A.	N.A.	N.A.	N.A.	N.A.	N. A.

Lithologic Analysis:

Unsound Lithotypes (%) 24		Sound Lithotypes (%) 76	
Acid Igneous	22	Acid Igneous	28
Sedimentary	2	Basic Igneous*	26
		Sandstone	10
		Metasediment	8
		Quartz	2
		Felsite	2

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
24	6	2.0	100,000

Location #: J6-63 County: Carleton

Type of Deposit: Ice-contact: kame Parish: Brighton

Exposure Type: Gravel pit NTS: 21 J/6W

Status: Inactive UTM: 220433

Section Description & Comments:

This deposit appears to be an isolated kame and is nearing depletion. The materials are similar to those described in J6-17.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
			Almost depleted

Location #: J6-64 County: Carleton

Type of Deposit: Ablation till Parish: Aberdeen

Exposure Type: Roadcut NTS: 21 J/6W

Status: Undeveloped UTM: 203441

Section Description & Comments:

This deposit forms a ridge approximately 1 km long, 100-150 m wide and 20-50 m high. An old road transects the ridge near the northeast end. Two adjacent roadcuts, each 1.5 m high show sandy till and massive medium sand respectively.

A dug hole on the ridge crest some 500 m southwest of the roadcuts showed sandy till.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable

Location #: J7-01

County: York

Type of Deposit: Ablation till

Parish: Douglas

Exposure Type: Roadcut

NTS: 21 J/7W

Status: Undeveloped

UTM: 563251

Section Description & Comments:

Approximately 2 m of bouldery ablation till with a clayey sandy matrix is visible here. Estimated texture: boulders (dominantly granitic) approximately 20%, cobbles approximately 10%, gravel approximately 15%, sand approximately 40%, fines approximately 15%.

It was noted that numerous small borrow pits in this area show the same kind of material. No attempt has been made to define the boundaries of the till.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	89.5	83.1	78.4	69.0	61.2	50.0	38.7	29.4	22.5	18.1	15.4

Lithologic Analysis:

Unsound Lithotypes (%) 62		Sound Lithotypes (%) 38	
Acid Igneous	60	Sandstone	4
Sedimentary	2	Basic Igneous*	11
		Acid Igneous	15
		Metasediment	8

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
		2	

Location #: J7-02

County: York

Type of Deposit: Glaciofluvial outwash

Parish: Douglas

Exposure Type: Borrow pit

NTS: 21 J/7W

Status: Abandoned

UTM: 548272

Section Description & Comments:

Approximately 3 m of moderately sorted, moderately stratified gravelly sands, sandy gravels and pebbly sands are exposed. Clasts are rounded to subrounded and are dominantly plutonic and sound. A number of large boulders remain in the pit floor. Cobbles represent 15%.

Water is present [illegible]e pit floor, Which may limit quantities available for exploitation.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	78.9	67.7	59.1	44.0	35.0	32.9	25.4	11.4	3.7	1.3	0.9

Lithologic Analysis:

Unsound Lithotypes (%) 22		Sound Lithotypes (%) 78	
Acid Igneous	22	Acid Igneous	12
		Basic Igneous *	46
		Metasediment	16
		Quartzite	4

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
15	3	2	40,000

Location #: J7-03

County: York

Type of Deposit: Glaciofluvial outwash

Parish: Douglas

Exposure Type: Cutbank

NTS: 21 J/7W

Status: Undeveloped

UTM: 544265

Section Description & Comments:

Approximately 1 m of gravelly sands/sandy gravels overlie 1 m of fine pebble sand. The materials are moderately-well sorted and clasts are rounded to subrounded. No stratification is evident save for the above observed change. Very few cobbles were present (less than 2%); no boulders were seen near the site.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
7.5	2	1	20,000

Location #: J7-04

County: York

Type of Deposit: Glaciofluvial

Parish: Douglas

Exposure Type: Roadcut

NTS: 21 J/7W

Status: Undeveloped

UTM: 538464

Section Description & Comments:

Approximately 6 m of sand was exposed in the cut. A few pebbles and a few cobbles were present throughout the sand. The deposit is generally well sorted and shows a suggestion of stratification with some discontinuous finer sand bands. The sand is generally medium-grained and clean.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
8	4	2	50,000

Location #: J7-05

County: York

Type of Deposit: Ice-contact

Parish: Douglas

Exposure Type: Roadcut, dug hole

NTS: 21 J/7W

Status: Undeveloped

UTM: 574425

Section Description & Comments:

Approximately 2 m of slumped over sandy cobbly materials were noted. The materials in a dug hole were poorly sorted and showed no stratification. Clasts are subangular to subrounded. Texture estimate: 3% fines, 50% sand, 30% pebbles, 15% cobbles, low proportion of boulders.

Small amounts of this material appear to have been used in the highway construction as borrow.

The boundaries of this deposit are indistinct. No estimate was made for reserves.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
		2	

Location #: J7-06

County: York

Type of Deposit: Glaciofluvial blanket

Parish: Douglas

Exposure Type: Borrow pit

NTS: 21 J/7W

Status: Abandoned

UTM: 580415

Section Description & Comments:

Approximately 1.5 m of gravelly sand overlies till in this exposure. The materials grade downwards from a gravelly sand to sand. Clasts are sub-angular and platelike. Sorting is poor to moderate and no definite stratification is apparent. Texture estimate: less than 5% fines, 60-65% sands, 25-30% pebbles, 3% cobbles, low proportion of boulders.

200-300 m towards the highway was a 4 m exposure of massive sands. These coarsen gradually to the site described above.

The boundary of this unit is indistinct and the thickness variable. No estimate of reserves was made.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
		1	

Location #: J7-07

County: York

Type of Deposit: Ice-contact

Parish: Douglas

Exposure Type: Roadcut

NTS: 21 J/7W

Status: Undeveloped

UTM: 554387

Section Description & Comments:

Approximately 4 m of slump-covered ice-contact materials are visible in this cut. A dug hole/trench revealed approximately 1.5 m of dirty, poorly sorted, compact gravelly sands. No stratification is evident, however a greater percent of cobbles appear to be coming out of the deposit below 2.5 m. Clasts are subangular to subrounded and generally sound.

Texture estimate: 5-10% fines, 50% sand, 35-40% pebbles, 5% cobbles, few boulders.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	95.7	86.8	80.8	67.9	54.3	48.0	35.3	23.6	16.1	11.2	8.5

Lithologic Analysis:

Unsound Lithotypes (%) 8		Sound Lithotypes (%) 92	
Sedimentary	4	Quartzite	4
Acid Igneous	4	Basic Igneous*	52
		Acid Igneous	16
		Metasediment	10
		Sandstone	2
		Andesite	8

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
15	3	1	25,000

Location #: J7-08

County: York

Type of Deposit: Esker

Parish: Douglas

Exposure Type: Gravel pit

NTS: 21 J/7W

Status: Active on demand

UTM: 690253

Section Description & Comments:

Materials exposed by the pit walls are cross-bedded and moderately to well stratified, poorly to well sorted. There are lenses of sand, gravelly cobbles and a few concentrations of boulders. Overall the texture is gravelly sand. Texture estimate (overall): trace of fines, 65-70% sand, 25-30% pebbles, 5-7% cobbles, few boulders. Clasts are subangular to round; the larger clasts are generally less rounded. Most clasts are competent; a few shale fragments were noted as being unsound.

The crest of the esker undulates so thickness of the deposit varies. Width is estimated to be 100 m. At the pit location the deposit widens thus increasing the available reserves. Some of these materials have been worked.

Sample J7-08A taken from 2 - 4 m
Sample J7-08B taken from 3.5 - 5 m

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing A	97.5	94.1	90.9	82.2	75.2	61.9	39.7	13.8	2.8	1.1	0.9
B	97.8	95.6	94.2	82.8	75.1	74.3	65.0	34.4	13.9	5.3	1.1

Lithologic Analysis:

Unsound Lithotypes (%)	A	B	Sound Lithotypes (%)	A	B
Sedimentary	14	18	Acid Igneous	26	22
Sandstone	6	6	Metasediment	10	30
			Basic Igneous*	24	16
			Andesite	8	-
			Quartz	2	-
			Sandstone	10	8

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
50	20	8-10	1,000,000

Location #: J7-09

County: York

Type of Deposit: Glaciofluvial

Parish: Stanley

Exposure Type: Roadcut

NTS: 21 J/7E

Status: Undeveloped

UTM: 766255

Section Description & Comments:

Approximately 2 m of gravelly sands are exposed in this roadcut. The materials are moderately sorted and appear non-stratified. Clasts are subangular to subrounded and generally competent although some are weathered and derived from the local sandstone and conglomerate bedrock.

Texture estimate: less than 5% fines, 65% sand, 30% pebbles, less than 5% cobbles. No boulders were observed.

The boundaries of this deposit are indistinct. As well the thickness appears variable. No estimate of reserves was made.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	98.75	97.04	93.6	84.0	72.1	65.2	45.6	20.9	6.8	3.4	2.7

Lithologic Analysis:

Unsound Lithotypes (%) 28		Sound Lithotypes (%) 72			
Acid Igneous	4	Metasediment	36	Quartz	4
Siltstone	8	Basic Igneous*	12	Feldspar	2
Sedimentary	14	Acid Igneous	8		
Slate	2	Quartzite	6		
		Sandstone	4		

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
		2	

Location #: J7-10 County: York

Type of Deposit: Ice-contact Parish: Stanley

Exposure Type: Gravel pit NTS: 21 J/7W

Status: Abandoned UTM: 712294

Section Description & Comments:

Approximately 15-20 m of granular materials are exposed at this site. The materials are moderately sorted and exhibit moderate stratification. Within the coarser materials there is some pebble imbrication indicating a southward flow of water. The upper 4-5 m is dominantly pebbly gravelly sand. This portion of the section contains 5% cobbles and a few (ice-rafted) boulders. Below this there is a dominantly sandy section for 5-7 m which grades downwards into apparently coarser material (gravelly sands) below. Clasts are subrounded and generally sound.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	97.0	88.3	84.0	66.0	50.1	38.2	21.1	12.7	5.0	2.4	1.8

Lithologic Analysis:

Unsound Lithotypes (%) 18		Sound Lithotypes (%) 82	
Sandstone	4	Basic Igneous *	36
Sedimentary	12	Acid Igneous	16
Acid Igneous	2	Metasediment	12
		Sandstone	8
		Andesite	2
		Quartz	8

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
32	20	10	2,000,000

Location #: J7-11 County: York

Type of Deposit: Alluvial terrace Parish: Stanley

Exposure Type: Roadcut, dug hole NTS: 21 J/7W

Status: Undeveloped UTM: 714291

Section Description & Comments:

Approximately 1 m of gravelly sand is seen in this bank. Materials are only moderately sorted. No stratification is apparent. This terrace is 4 m above present river level and does not appear to have been flooded recently. Clasts are rounded. Approximately 5-10% appear unsound.

Texture estimate: 50% sand, 40% pebbles, 10% cobbles. No boulders were observed.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	83.8	69.9	63.0	46.7	37.4	35.1	28.7	15.0	5.9	3.5	2.4

Lithologic Analysis:

Unsound Lithotypes (%)	10	Sound Lithotypes (%)	90
Sandstone	2	Acid Igneous	20
Acid Igneous	4	Metasediment	24
Sedimentary	4	Basic Igneous*	32
		Andesite	2
		Quartz	8
		Sandstone	4

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
8	1.5	2	20,000

Location #: J7-12

County: York

Type of Deposit: Glaciofluvial outwash

Parish: Stanley

Exposure Type: Gravel pit

NTS: 21 J/7E

Status: Active

UTM: 793267

Section Description & Comments:

Approximately 5-6 m of cobbly sandy gravel is exposed in this pit. Generally the materials are massive but a few bands of pebbly sand do occur. Clasts are rounded to subrounded. Clast imbrication indicates flow direction to have been the same as the present Nashwaak River.

Texture estimate: 50% sand, 30% pebbles, 15-20% cobbles, occasional boulders (some very large).

At time of visit a crusher and hot mix asphalt plant were working the pit.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	57.9	47.2	41.8	30.1	24.9	23.7	15.3	4.5	1.4	0.9	0.8

Lithologic Analysis:

Unsound Lithotypes (%)	20	Sound Lithotypes (%)	80
Basic Igneous	2	Acid Igneous	20
Sedimentary	12	Metasediment	30
Chert	6	Basic Igneous*	18
		Sandstone	6
		Diorite	4
		Andesite	2

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
18	12	5	500,000

Location #: J7-13 County: York

Type of Deposit: Alluvial terrace Parish: Stanley

Exposure Type: Cutbank of river NTS: 21 J/7E

Status: Undeveloped UTM: 803263

Section Description & Comments:

Approximately 3 m of gravelly sand is capped by 0.5-1.0 m of fine-medium sand. The materials show poor to moderate stratification and imbrication. Clasts are subrounded to round and generally competent.

Texture estimate (gravelly sand unit): 60-65% sand, 30-35% pebbles, 5-10% cobbles. No boulders were observed.

Most of this terrace is under cultivation or pasture.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	89.9	77.1	70.1	52.1	37.4	32.8	25.7	9.6	3.7	1.8	1.2

Lithologic Analysis:

Unsound Lithotypes (%) 18		Sound Lithotypes (%) 82	
Acid Igneous	2	Metasediment	24
Slate	8	Quartzite	8
Schist	2	Basic Igneous *	40
Basic Igneous	4	Acid Igneous	8
Metasediment	2	Quartz	2

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
60	8	2	100,000

Location #: J7-14 County: York

Type of Deposit: Glaciofluvial terrace (s) Parish: St. Mary's

Exposure Type: Gravel pit NTS: 21 J/7E

Status: Abandoned UTM: 822260

Section Description & Comments:

Approximately 4-5 m moderately-well sorted, non-stratified gravelly sands are exposed in this pit. Clasts are subrounded to round. Estimated texture: sand 70-75%, pebbles 25%, cobbles less than 5%. No boulders were observed.

To the southwest, across the road another pit has been excavated to a depth of 5-6 m in a lower level terrace. This pit has a higher sand content and correspondingly fewer pebbles and cobbles.

Most of this deposit has been worked to some degree. In addition there are roads and a railway cutting across the terraces further limiting available reserves.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	96.8	86.1	78.6	60.3	47.3	43.7	35.6	20.8	6.5	3.0	1.8

Lithologic Analysis:

Unsound Lithotypes (%)		Sound Lithotypes (%)	
Conglomerate	2	Sandstone	14
Sandstone	2	Basic Igneous	30
Acid Igneous	2	Acid Igneous	14
Siltstone	2	Metasediment	26
		Quartz	8

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
15	2.5	5	80,000

Location #: J7-15 County: York

Type of Deposit: Glaciofluvial complex Parish: Stanley

Exposure Type: Gravel pit NTS: 21 J/7E

Status: Active on demand UTM: 817266

Section Description & Comments:

An average of 7 m massive and crudely stratified gravelly sands are exposed. Occasional sand lenses and pockets of coarser material were observed. Clasts are subrounded and sound.

The surface of the deposit is irregular, resulting in accumulations of fines in hollows and variable thicknesses of granular material. Present pit size: 200 m x 300 m.

Estimated overall texture: less than 5% fines, 70-75% sand, 20-25% pebbles, 5% cobbles, few boulders.

There is a public dump located on this terrace to the northeast of the gravel pit. Access is via a different road. This alternate use will limit available reserves.

D.O.T. data (1967) indicate a Los Angeles abrasion loss of 27.6 to 28.5% and that the material can be recommended for borrow, subbase and base course aggregate. D.O.T. currently uses the deposit.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	89.5	77.7	69.7	53.9	41.2	35.0	21.4	6.7	1.5	0.7	0.6
D.O.T. 1967	64.0		51.8		29.9			7.3			2.4
D.O.T. 1967	83.0		69.9		47.2			13.6			2.8

Lithologic Analysis:

Unsound Lithotypes (%) 12		Sound Lithotypes (%) 88	
Chert	2	Basic Igneous*	62
Sedimentary	2	Acid Igneous	10
Acid Igneous	2	Metasediment	8
Sandstone	6	Quartzite	4
		Sandstone	4

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
23	10	5	500,000

Location #: J7-16

County: York

Type of Deposit: Kame terrace

Parish: Stanley

Exposure Type: Gravel pit

NTS: 21 J/7E

Status: Inactive

UTM: 740473

Section Description & Comments:

Approximately 3 m of poorly sorted, crudely stratified sandy gravels are visible in this pit. Clasts are subrounded and of variable lithologies. Pockets of laminated sands were observed elsewhere in the pit as well as concentrations of bouldery cobbles.

Estimated texture: 5% fines, 40% sands, 40-45% pebbles, 5-10% cobbles, few boulders.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	88.2	77.7	71.1	52.0	39.8	31.0	16.7	5.1	1.0	0.5	0.47

Lithologic Analysis:

Unsound Lithotypes (%)		Sound Lithotypes (%) 100	
		Sandstone 40	Acid Igneous 4
		Metasediment 18	Quartz 2
		Basic Igneous* 18	Quartzite 2
		Siltstone 16	

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
23	15	2.0	200,000

Location #: J7-17 County: York

Type of Deposit: Glaciofluvial plain Parish: Stanley

Exposure Type: Roadcut NTS: 21 J/7W

Status: Undeveloped UTM: 703455

Section Description & Comments:

Approximately 1.5 m of moderately sorted, apparently non-stratified gravelly sands are exposed in this cut. Clasts are subrounded and many are platey. Texture: boulders - 1 observed, cobbles less than 5%, pebbles 35-40%, sand 55-60%, fines - trace.

Water table would present limitations for excavation in this deposit.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	90.2	74.6	65.3	44.6	32.1	25.2	15.3	5.7	2.9	1.9	1.6

Lithologic Analysis:

Unsound Lithotypes (%) 18		Sound Lithotypes (%) 82	
Acid Igneous	14	Sandstone	36
Basic Igneous	2	Metasediment	14
Sedimentary	2	Basic Igenous*	32

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
30	25	2.0	400,000

Location #: J7-18

County: York

Type of Deposit: Glaciofluvial

Parish: Stanley

Exposure Type: Gravel pit

NTS: 21 J/7E

Status: Active

UTM: 913447

Section Description & Comments:

Poorly sorted, crudely-stratified angular to subangular cobble gravel in a silty sandy matrix with strata dipping approximately 20° north northeast overlies well sorted, well-stratified pebbly sands in an antiform structure. The cobble gravel varies in thickness from 2.0 to 6.0 m; the sands vary from 0 to 7.5 m.

The entire deposit forms a hill about 12 m high. The present pit face is 10 m at the crest.

Estimated texture: (Upper unit) trace boulders, 20% cobbles, 30% pebbles, 40% sand, 10% fines. Most of the cobbles are coated with fines. (Lower unit) 5% pebbles, 90-95% sand, 0-5% fines.

The material is used for fill (pers. comm. with workmen).

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	64.3	55.1	48.7	39.6	33.0	25.1	16.0	8.4	3.5	2.2	1.9

Lithologic Analysis:

Unsound Lithotypes (%)		Sound Lithotypes (%)	
Sandstone	10	Sandstone	32
Shale	6	Basic Igneous*	8
		Shale	30
		Silt stone	10
		Slate	4

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
3	3	6	180,000

Location #: J7-19 County: York

Type of Deposit: Glaciofluvial blanket Parish: Stanley

Exposure Type: Borrow pit NTS: 21 J/7E

Status: Abandoned UTM: 782447

Section Description & Comments:

Approximately 1.0-1.5 m of gravelly sand to sandy gravel is exposed in this borrow site. Materials are crudely stratified and poorly to moderately sorted. Clasts are subrounded and sound. Estimated texture: trace of fines, 45-50% sand, 45-50% pebbles, 5-10% cobbles. No boulders were seen.

Bedrock was observed in the pit floor centre; till was below the gravels in other places. No estimate was made as materials appear thin.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis:

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
		1.0	

Location #: J7-20

County: York

Type of Deposit: Glaciofluvial

Parish: Stanley

Exposure Type: Roadcut

NTS: 21 J/7E

Status: Undeveloped

UTM: 835343

Section Description & Comments:

Poorly to moderately sorted, moderately stratified gravelly sands are exposed here. Thickness of the deposit is variable but is between 1-5 m, more commonly 3-4 m. Clasts are subangular to subrounded. A few cobbles were noted; all were less than 100 mm.

The sands are iron rich.

Across the creek, the cobble content is higher and size larger, and several boulders are present.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	87.9	78.7	73.0	54.7	40.1	34.9	27.0	16.9	8.6	5.2	3.8

Lithologic Analysis:

Unsound Lithotypes (%)	6	Sound Lithotypes (%)	94	
Acid Igneous	4	Basic Igneous*	27	Acid Igneous 13
Sandstone	2	Metasediment	23	
		Sandstone	19	
		Quartz	6	
		Quartzite	6	

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
5	2	2	30,000

Location #: J7-21 County: York

Type of Deposit: Glaciofluvial-complex Parish: Stanley

Exposure Type: Borrow pit NTS: 21 J/7E

Status: Abandoned UTM: 829332

Section Description & Comments:

Approximately 1.5 m of sands with some gravels and cobbles are exposed in this small pit. Sorting is moderate to good; stratification is not evident. Clasts are subrounded and sound. Estimated texture: sand 85%, pebbles 5-10%, cobbles 5-10%, occasional boulder.

The boundaries of this unit are indistinct and thickness appears variable on the air photos. No reserves were estimated.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
		1.5	

Location #: J7-22

County: York

Type of Deposit: Glaciofluvial

Parish: Stanley

Exposure Type: Roadcut

NTS: 21 J/7E

Status: Undeveloped

UTM: 844443

Section Description & Comments:

Approximately 2 m of poorly sorted, very crudely stratified granular materials are exposed here. Clasts are subangular to subrounded. Estimated texture: boulders - occasional, cobbles 10%, pebbles 40%, sand 45%, fines 5%.

Numerous clasts seemed to be unsound (estimated 10-15%).

This is a small deposit and probably suitable only for borrow. No estimate was made of reserves.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	75.7	64.4	57.2	43.7	33.0	30.2	20.4	12.0	6.3	3.5	2.3

Lithologic Analysis:

Unsound Lithotypes (%) 16		Sound Lithotypes (%) 84	
Sedimentary	4	Basic Igneous *	46
Acid Igneous	8	Metasediment	18
Sandstone	4	Acid Igneous	8
		Sandstone	12

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
		2	

Location #: J7-23

County: York

Type of Deposit: Glaciofluvial blanket

Parish: Stanley

Exposure Type: Borrow pit

NTS: 21 J/10E

Status: Abandoned

UTM: 913524

Section Description & Comments:

Approximately 2 m of well sorted cross-bedded sands and pebbly sand are exposed in this cut. No cobbles were observed. Estimated texture: pebbles 10-15%, sand 85-90%, fines approximately trace. Clasts are subrounded to rounded.

Bedrock was observed on the pit floor. Pit is small: 20 m x 15 m.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis:

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
26	4	1.5	50,000

Location #: J7-24

County: York

Type of Deposit: Glaciofluvial veneer

Parish: Stanley

Exposure Type: Sand borrow pit

NTS: 21 J/7E

Status: Abandoned

UTM: 847479

Section Description & Comments:

There are 0.5 m sands with 5% pebbles and cobbles here. Below 0.5 m the sand is moderately-well indurated. This maybe a weathered sandstone.

This is a small deposit with minimal reserves. No estimate was made.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable

Location #: J7-25

County: York

Type of Deposit: Ablation till

Parish: Stanley

Exposure Type: Roadcut/borrow site

NTS: 21 J/7E

Status: Inactive

UTM: 757459

Section Description & Comments:

About 3-4 m sandy till is exposed here. It has been used for borrow. Estimated texture: matrix: 20% fines, 25% sand; coarse fraction: 50% pebbles, 5% cobbles, occasional boulders.

This same material was observed in several roadcuts in this area. It is only suitable for local fill. No reserves are estimated.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
		Variable	

Location #: J7-26

County: York

Type of Deposit: Ice-contact: veneer

Parish: Stanley

Exposure Type: Borrow pit

NTS: 21 J/7E

Status: Abandoned

UTM: 813394

Section Description & Comments:

0.5-2.0 m dirty cobbly pebbly sand overlies shattered bedrock in this borrow site. Estimated texture: fines 5-10%, sand 40%, pebbles 40%, cobbles 10%, boulders few.

The boundaries of this deposit are indistinct and the materials vary in thickness. No estimate of reserves was made.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
		1.0	

Location #: J7-27

County: York

Type of Deposit: Ice-contact

Parish: Stanley

Exposure Type: Borrow pit

NTS: 21 J/7E

Status: Inactive

UTM: 756340

Section Description & Comments:

Approximately 1.0 m dirty gravelly sand overlies bedrock. Exposure is poor; materials appear to thin rapidly upslope.

Unit is small; no reserves were estimated.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable

Location #: J10-01

County: York

Type of Deposit: Glaciofluvial terrace

Parish: Stanley

Exposure Type: Roadcut

NTS: 21 J/10W

Status: Inactive

UTM: 646575

Section Description & Comments:

Approximately 1.5 m of gravelly sand/sandy gravels are exposed here. There is no apparent stratification although there is some imbrication of the plate-shaped clasts indicating similar flow directions as for the present river. The materials are moderately sorted and clasts are subrounded.

Estimated texture: Boulders-none observed, cobbles 5%, pebbles 45-50%, sand 45-50%, fines trace.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	94.8	87.7	77.3	53.1	37.2	29.4	10.9	3.6	2.5	1.9	1.4

Lithologic Analysis:

Unsound Lithotypes (%)	10	Sound Lithotypes (%)	90		
Acid Igneous	8	Basic Igneous *	14	Quartz	2
Sedimentary	2	Sandstone	24		
		Metasediment	20		
		Acid Igneous	20		
		Andesite	8		
		Slate	2		

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
7	3	1	30,000

Location #: J10-02

County: York

Type of Deposit: Glaciofluvial terrace

Parish: Stanley

Exposure Type: Borrow pit

NTS: 21 J/10W

Status: Abandoned

UTM: 674598

Section Description & Comments:

Approximately 3 m of pebbly sand is exposed here. Materials are well-sorted, large clasts are subrounded to round. Some stratification is evident: there seemed to be layers of pebbly sand, coarse sand, and medium sand. Cobbles were scattered throughout though sparsely. Texture estimate: no boulders observed, cobbles 2%, pebbles 5-10% (mostly fine), sand 90%.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
27	15	3	300,000

Location #: J10-03

Type of Deposit: Ice-contact

Exposure Type: Trench

Status: Inactive

County: York

Parish: Stanley

NTS: 21 J/10W

UTM: 656777

Section Description & Comments:

Approximately 1.5-2.0 m poorly sorted bouldery cobbly gravelly sand is exposed in this trench. Clasts are subangular to subrounded.

Texture estimate: boulders 7%, cobbles 10-15% pebbles 30%, sand 50%, fines 5%.

Nearby borrow pits show similar texture. Bedrock is visible in places.

The surface expression of this deposit is undulating. Material thickness is thought to be variable and in places, discontinuous.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
40	15	1.5	150,000

Location #: J10-04 County: York

Type of Deposit: Glaciofluvial terrace Parish: Stanley

Exposure Type: Gravel pit NTS: 21 J/10E

Status: Active on demand UTM: 911533

Section Description & Comments:

Two terrace levels are excavated in this pit. The upper one appears to be glaciofluvial in origin and the lower one alluvial. The upper one was described and sampled as it has a greater thickness of materials.

Approximately 7 m of non-stratified, poorly sorted cobbly gravelly sands are exposed in the present backwall of the pit. Clasts are subrounded to round and of varying lithologies; dominant lithology is granitic, subordinate are metasediments.

Texture is extremely variable although sand predominates: boulders few cobbles, 5-10%, pebbles 15%, sand 70-75%, fines less than 5%.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	80.0	65.8	61.5	50.1	42.3	39.7	35.2	27.9	19.6	9.9	4.9

Lithologic Analysis:

Unsound Lithotypes (%) 2		Sound Lithotypes (%) 98	
Acid Igneous	2	Basic Igneous *	72
		Acid Igneous	10
		Metasediment	6
		Sandstone	6
		Quartz	2
		Quartzite	4

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
15	3	7 - upper 3 - lower	100,000

Location #: J10-05 **County:** York

Type of Deposit: Glaciofluvial **Parish:** Stanley

Exposure Type: Gravel pit **NTS:** 21 J/10E

Status: Inactive **UTM:** 895547

Section Description & Comments:

0 - 0.5 m Moderately-well sorted sandy pebble gravels, moderately stratified, dipping approximately 10°S. Materials appear to coarsen downwards.

5.0 - 10.0 m Moderately sorted gravelly sands to sandy gravels, no stratification apparent due to slump covering. Cobbles are present in this section.

10.0 - 15.0 m Silty fine sands grading downward into pebbly sand. Moderate stratification is exposed, dipping approximately 10°S.

Estimated overall texture: boulders-none observed, cobbles 5%, pebbles 40-45%, sand 45-50%, fines 5

This particular deposit consists of an isolated erosional hummock. There may be more of the same material on other sides of the channels around the hummock.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	97.2	89.6	82.9	62.2	43.2	37.2	24.7	13.3	7.8	5.1	3.5

Lithologic Analysis:

Unsound Lithotypes (%) 22		Sound Lithotypes (%) 78	
Sedimentary	10	Basic Igneous*	38
Acid Igneous	6	Sandstone	14
Basic Igneous	6	Metasediment	14
		Acid Igneous	6
		Quartz	4
		Quartzite	2

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
6	5	10	400,000

Location #: J10-06

County: York

Type of Deposit: Glaciofluvial

Parish: Stanley

Exposure Type: Gravel pit

NTS: 21 J/10E

Status: Inactive

UTM: 882565

Section Description & Comments:

Approximately 4-5 m of moderately stratified, moderately sorted gravelly sand to sandy gravel is exposed here. On the west side of the pit the material is dipping 25° SE (deltaic); on the south side of the pit 2.0 m of horizontal beds overlie similarly dipping beds. To the southeast a capping (in a depression) of cross-bedded sands 1 m thick overylie horizontally bedded gravelly sands; the gravelly sands come to surface at the east side of the pit.

Clasts are subangular to subrounded and apparently sound metasediments and granites. Texture varies due to stratification but overall: boulders-occasional, cobbles 5-10%, pebbles 40%, sand 45-50%, fines-trace.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	91.7	83.4	76.9	56.3	37.0	32.5	25.7	18.0	8.4	3.2	1.9

Lithologic Analysis:

Unsound Lithotypes (%)		Sound Lithotypes (%)	
Sedimentary	14	Acid Igneous	10
Acid Igneous	8	Metamorphic	2
		Metasediment	36
		Sandstone	18
		Quartz	4
		Basic Igneous *	8

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
40	25	2.0	500,000

Location #: J10-07

County: York

Type of Deposit: Ablation till

Parish: Stanley

Exposure Type: Borrow site

NTS: 21 J/10E

Status: Abandoned

UTM: 837572

Section Description & Comments:

An average of 1.5-2.0 m of granular materials were observed in this old pit but are in a very disrupted condition. There appears from roadcuts, to have been a gravelly sandy veneer/blanket overlying till, bedrock or both. Occasional boulders were observed, some cobbles; dominant texture appears to be gravelly sand. Most clasts were subrounded and often platey.

This material is of very poor quality and is suitable only for borrow.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
20	10	1	100,000

Location #: J10-08 County: Carleton

Type of Deposit: Glaciofluvial Parish: Kent

Exposure Type: Roadcut NTS: 21 J/10W

Status: Undeveloped UTM: 573749

Section Description & Comments:

Approximately 2 m of poorly sorted, non-stratified sandy gravels are exposed at this site. Clasts are subangular to subrounded and sound although of varying lithologies.

Texture estimate: boulders few, cobbles 15%, pebbles 50%, sand 35-40%, fines less than 5%.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	77.3	63.4	56.1	44.9	34.4	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

Lithologic Analysis:

Unsound Lithotypes (%) 22		Sound Lithotypes (%) 78	
Acid Igneous	14	Basic Igneous*	34
Sedimentary	8	Acid Igneous	32
		Sandstone	4
		Felsite	2
		Quartz	2
		Olivine	2

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
6	2	2.5	50,000

Location #: J10-09

County: Carleton

Type of Deposit: Ice-contact

Parish: Kent

Exposure Type: Gravel pit

NTS: 21 J/10W

Status: Active on demand

UTM: 573767

Section Description & Comments:

Approximately 3-5 m of granular materials are exposed here. Lateral variation is extreme - from lenses/bands of sands to poorly stratified, very poorly sorted sections of subangular gravelly sands to cobbly gravels. One very large "VW-sized" boulder was observed.

Estimate overall texture: boulders few, cobbles 5-10%, pebbles 30-35%, and 60% sand.

Few unsound clasts were observed. Dominant lithology: granitic.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	92.1	75.7	70.8	48.5	34.4	24.0	16.9	10.8	4.8	1.6	1.4

Lithologic Analysis:

Unsound Lithotypes (%) 4		Sound Lithotypes (%) 96	
Sandstone	2	Basic Igneous*	14
Acid Igneous	2	Metasediment	10
		Sandstone	22
		Acid Igneous	50

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
18	12	3	300,000

Location #: J10-10 County: York

Type of Deposit: Ice-contact Parish: Stanley

Exposure Type: Gravel pit NTS: 21 J/10W

Status: Active on demand UTM: 609767

Section Description & Comments:

0 - 1.5 m Overburden: till
1.5 - 2.5 m Approximately horizontal, poorly sorted cobbly, gravelly sand.
2.5 - 15 m Well stratified, moderate to well sorted gravelly sand, gravel, and sands. Dip of beds changes: synform structure. On west side of pit beds appear deltaic dipping to east but flatten out and turn up at east side of pit so that they are dipping slightly west but at a lower angle.

Texture estimate: boulders-occasional (out of till at top), cobbles 5%, pebbles 25%, sands 60-70%, low proportion of fines.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	94.6	84.0	77.9	56.6	39.2	32.8	23.4	10.5	5.9	2.9	1.5

Lithologic Analysis:

Unsound Lithotypes (%) 4		Sound Lithotypes (%) 96	
Sedimentary	2	Basic Igneous*	34
Acid Igneous	2	Acid Igneous	26
		Metasediment	19
		Sandstone	17

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
21	15	10	1,200,000

Location #: J10-10a

County: York

Type of Deposit: Ice-contact

Parish: Stanley

Exposure Type: Sand pit

NTS: 21 J/10W

Status: Active on demand

UTM: 609765

Section Description & Comments:

In this pit (across road from J10-10) sands are dominant (more than 90%). They are well stratified and show wavy bedding. A few wedges of coarse gravel were observed and numerous boulders (ice-rafted) were observed in situ and piled on the pit floor.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
See J10-10		5	

Location #: J10-11 County: York

Type of Deposit: Glaciofluvial blanket Parish: Stanley

Exposure Type: Roadcut NTS: 21 J/10W

Status: Undeveloped UTM: 616718

Section Description & Comments:

Approximately 1.5 m fine gravelly coarse sand is exposed here. Materials are moderately well sorted and are non-stratified. Clasts are angular to subangular and often unsound weathered granitic fragments.

It is thought that this blanket overlies weathered granitic and high grade metamorphic bedrock.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis:

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
3	1.5	1.0	15,000

Location #: J10-12

County: Northumberland

Type of Deposit: Ice-contact blanket/veneer

Parish: Ludlow

Exposure Type: Roadcut

NTS: 21 J/10E

Status: Undeveloped

UTM: 896796

Section Description & Comments:

Approximately 1.5-2.0 m poorly sorted granular materials are exposed here. Pockets of poorly stratified pebbly fines and sand were observed as well as pockets of subangular-subrounded cobbles and boulders. Texture is extremely variable: boulders few cobbles 15-20%, pebbles 20-25%, sand 40-50%, fines 10%.

Clasts are competent and of granitic and high grade metamorphic lithologies.

This material is of poor quality due to high large clast and fines content and is suitable only for borrow.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	91.0	85.5	79.4	65.8	54.4	51.1	45.6	38.1	29.1	19.0	11.3

Lithologic Analysis:

Unsound Lithotypes (%) 46		Sound Lithotypes (%) 54	
Acid Igneous	34	Basic Igneous*	26
Sandstone	6	Acid Igneous	28
Sedimentary	6		

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
15	5	1.0	50,000

Location #: J10-13 County: York

Type of Deposit: Glaciofluvial terrace Parish: Stanley

Exposure Type: Borrow pit NTS: 21 J/10E

Status: Abandoned UTM: 868592

Section Description & Comments:

0 - 0.8 m Poor-moderately sorted, non-stratified cobbly sandy gravels. Gravels are subangular to subrounded and cemented together

0.8 - 1.2 m Gravelly sand. Moderate-well sorted, poorly stratified. Gravels subrounded to round. Cemented

1.2 - 2.0 m Gravelly sands/sandy gravels - moderately sorted, moderately stratified. Clasts subangular to subrounded. Some imbrication of platey fragments. Cobbles/occasional boulder present.

Estimated texture: boulders few, cobbles 5-10%, pebbles 30%, sand 60-65%, fines-trace. Materials are generally quite clean.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	79.7	65.6	57.0	45.3	40.3	38.7	33.3	17.7	3.5	1.3	1.0

Lithologic Analysis:

Unsound Lithotypes (%) 14		Sound Lithotypes (%) 86			
Acid Igneous	12	Basic Igneous*	40	Quartz	2
Slate	2	Acid Igneous	16		
		Sandstone	8		
		Metasediment	4		
		Quartzite	4		
		Dolomite	4		

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
9	3	2.0	60,000

Location #: J10-14

County: York

Type of Deposit: Glaciofluvial

Parish: Stanley

Exposure Type: Borrow pit

NTS: 21 J/10E

Status: Inactive

UTM: 820632

Section Description & Comments:

Approximately 2.5 m of moderately-well sorted, moderately-well stratified gravelly sands/sands are exposed on both sides of the road. North of the road the gravel fraction is greater; south of the road is dominantly sand. Occasional boulders (subangular) were observed.

Estimated texture: boulders-trace, cobbles few, pebbles 20-25%, sands 75%, fines-trace.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	Nil	96.0	87.3	65.1	48.4	40.8	28.2	13.2	4.8	1.6	0.7

Lithologic Analysis:

Unsound Lithotypes (%) 26		Sound Lithotypes (%) 74	
Acid Igneous	16	Acid Igneous	32
Basic Igneous	6	Basic Igneous*	30
Sandstone	2	Sandstone	6
Slate	2	Metasediment	4
		Quartz	2

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
30	15	2.0	250,000

Location #: J10-15 County: York

Type of Deposit: Glaciofluvial terrace Parish: Stanley

Exposure Type: Roadcut NTS: 21 J/10E

Status: Undeveloped UTM: 795629

Section Description & Comments:

Exposed along this road are poorly sorted, crudely stratified bouldery cobbly gravels to cobbly gravelly sands. Boulders and large cobbles are common especially on the upper terrace. Clasts are subangular to sub-rounded.

The deposit is divided into upper and lower terraces being the coarser of the two levels. The upper materials are approximately 5-6 m thick; the lower are 2-3 m thick to river level.

Estimated texture: boulders 5%, cobbles 15%, pebbles 40%, sand 30-40%.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
25	15	4	600,000

Location #: J10-16 County: York

Type of Deposit: Glaciofluvial Parish: Stanley

Exposure Type: Roadcut/Trench NTS: 21 J/10E

Status: Undeveloped UTM: 785628

Section Description & Comments:

Approximately 2 m of compact to loose, poorly sorted, non-stratified cobbly sandy gravelly-cobbly gravelly sand is exposed here. Clasts are sub-angular to subrounded. Some of the cobbles are weathered and break easily.

Estimated texture: boulders-trace, cobbles 5%, pebbles 40%, sands 50-60%, fines-trace.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	97.8	79.4	68.2	48.7	38.8	32.5	17.6	6.2	3.4	2.3	1.8

Lithologic Analysis:

Unsound Lithotypes (%) 10		Sound Lithotypes (%) 90	
Acid Igneous	6	Basic Igneous*	46
Sedimentary	2	Acid Igneous	18
Sandstone	2	Metasediment	12
		Quartzite	8
		Sandstone	4
		Conglomerate	2

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
12	8	2.0	100,000

Location #: J10-17

County: York

Type of Deposit: Glaciofluvial

Parish: Stanley

Exposure Type: Borrow pit

NTS: 21 J/10E

Status: Inactive

UTM: 769636

Section Description & Comments:

Approximately 4 m of poorly to moderately sorted, poorly stratified, gravelly sands are exposed here. The deposit is quite small and suited only for local borrow purposes. Clasts are subangular to subrounded.

Estimated texture: boulders-trace, cobbles 5-10%, pebbles 25%, sands 65-70%, fines-trace.

This is a small pit (150 m x 200 m) with a complex of glaciofluvial materials.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
12	2	2	50,000

Location #: J10-18 County: York

Type of Deposit: Ice-contact: kame terrace Parish: Stanley

Exposure Type: Borrow pit NTS: 21 J/10E

Status: Inactive UTM: 800634

Section Description & Comments:

Approximately 15 m of poorly sorted ice-contact gravelly sands are exposed in the face here. Slump features, pockets and contorted beds are all present. Clasts are subangular to subrounded. It is thought that the materials of the deposit are thickest in the pit area.

Estimated texture: boulders few, cobbles 5-10%, pebbles 25%, sands 65%, fines 5%.

This is a small pit (150 m x 200 m).

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis:

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
6	2	6	120,000

Location #: J10-19 County: York

Type of Deposit: Glaciofluvial Parish: Stanley

Exposure Type: Sand pit NTS: 21 J/10E

Status: Active on demand UTM: 818691

Section Description & Comments:

Approximately 1.5 m of well sorted interbedded fine and coarse sand is exposed here. Overlying this sand is 0.5 m till-like overburden which contributes the odd cobble and pebble-sized clasts to the excavated mixture.

To the east side of the pit area several large granitic boulders were observed and small fragements of weathered granite. It is suggested that the materials here have been transported but not far from this place of origin. (This area appears underlain by weathered granitic bedrock).

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
20	10	1.0	100,000

Location #: J10-20 **County:** York

Type of Deposit: Glaciofluvial terrace **Parish:** Stanley

Exposure Type: Borrow pit **NTS:** 21 J/10E

Status: Active on demand. **UTM:** 808714

Section Description & Comments:

Approximately 2.0-2.5 m moderately sorted, moderately stratified gravelly sands overlie 3.0-3.5 m cross-bedded fine sands. Occasional cobble-size dropstones are present in the sand. Clasts are subrounded and generally sound.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	93.0	78.9	72.9	55.5	40.8	29.3	12.9	3.7	0.9	0.7	0.6

Lithologic Analysis:

Unsound Lithotypes (%) 12		Sound Lithotypes (%) 88	
Acid Igneous	8	Acid Igneous	58
Sedimentary	4	Metasediment	6
		Basic Igneous *	16
		Sandstone	8

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
15	10	3.0	250,000

Location #: J10-21 **County:** York

Type of Deposit: Ice-contact **Parish:** Stanley

Exposure Type: Roadcut **NTS:** 21 J/10E

Status: Undeveloped **UTM:** 811718

Section Description & Comments:

Approximately 3 m of poorly sorted, apparently non-stratified cobbly gravelly sands are exposed in this cut. Clasts are subangular to subrounded and competent. A few boulders are present.

Estimated texture: boulders few, cobbles 5-10%, pebbles 35-40%, sand 40-45%, fines 5-10%.

Note: This unit sample may be from an ice-contact deposit that extends to the east from this location. Reserves would then become significantly larger.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	90.4	75.2	66.5	46.1	33.0	23.5	14.8	7.0	3.2	2.1	1.8

Lithologic Analysis:

Unsound Lithotypes (%) 32		Sound Lithotypes (%) 68	
Acid Igneous	30	Acid Igneous	56
Basic Igneous	2	Basic Igneous *	8
		Sandstone	2
		Metasediment	2

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
15	8	2	120,000

Location #: J10-22 County: York

Type of Deposit: Glaciofluvial terrace Parish: Stanley

Exposure Type: Roadcut/borrow site NTS: 21 J/10E

Status: Undeveloped UTM: 798757

Section Description & Comments:

Approximately 4 m moderately to poorly sorted, non-stratified cobbly sandy gravel is exposed here. Clasts are subrounded. Some imbrication. A few weathered clasts were observed.

Estimated texture: boulders-trace (less than 300 mm), cobbles 5%, pebbles 45-55%, sand 40%, fines less than 5%.

Glaciofluvial deposits to the north appear thinner (1-2m) but could be expected to provide additional reserves if they were needed. Old channels within the deposits would likely result in much textural variability.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	80.3	65.0	61.1	44.7	34.3	21.7	9.5	2.8	0.9	0.7	0.6

Lithologic Analysis:

Unsound Lithotypes (%) 2		Sound Lithotypes (%) 98	
Acid Igneous	2	Acid Igneous Basic Igneous *	86 12

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
20	6	3.0	150,000

Location #: J10-23 County: Northumberland

Type of Deposit: Glaciofluvial terrace Parish: Ludlow

Exposure Type: Borrow pit NTS: 21 J/10E

Status: Abandoned UTM: 857712

Section Description & Comments:

An estimated 2 m of large cobbly, gravelly coarse sand, coarse sandy gravel is poorly exposed in this excavation. Sorting is poor and no stratification was observed. Clasts are subangular and sound.

Some boulders were observed; cobbles 5-10%. No fines were observed.

Reserves are calculated for the immediate area around the site described. The glaciofluvial unit extends along the Little Dungarvon River for several kilometres. Total reserves are estimated to be 5,000,000 m^3 of coarse aggregate (includes J10-23,24)

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
7.5	4	1	40,000

Location #: J10-24 **County:** Northumberland

Type of Deposit: Glaciofluvial terrace **Parish:** Ludlow

Exposure Type: Borrow pit **NTS:** 21 J/10E

Status: Inactive (possibly active on demand) **UTM:** 899718

Section Description & Comments:

Approximately 3 m of cobbly gravelly coarse sand is exposed in this excavation. Sorting is poor and the materials appear non-stratified. Clasts are subrounded to subangular and sound.

A few boulders were observed; cobbles 10-15%.

Reserves are calculated for the immediate area around the site described. The glaciofluvial unit extends along the Little Dungarvon River for several kilometres. Total reserves are estimated to be 5,000,000 m^3 of coarse aggregate (includes J10-23,24)

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	86.2	70.9	64.3	48.9	38.1	31.8	17.5	4.6	1.2	0.7	0.6

Lithologic Analysis:

Unsound Lithotypes (%) 16		Sound Lithotypes (%) 84	
Acid Igneous	16	Acid Igneous	68
		Basic Igneous *	10
		Sandstone	6

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
7	5	2	80,000

Location #: J10-25 **County:** York

Type of Deposit: Glaciofluvial blanket/veneer **Parish:** Stanley

Exposure Type: Roadcut **NTS:** 21 J/10E

Status: Undeveloped **UTM:** 823688

Section Description & Comments:

1 m of fine pebbly coarse sand is exposed here. No stratification is evident. Sorting is moderate: a few large pebbles and occasional cobbles were observed. Clasts are angular to subangular generally, although the larger clasts are subrounded.

The sand and small pebbles appear to be derived from weathered granite, which appears in nearby outcrops. Large blocks of weathered granite are abundant. Bedrock is probably close to surface under this glaciofluvial blanket/veneer.

This unit is variable in thickness and boundaries are indistinct. No reserves have been estimated.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
		1,0	

Location #: J10-26

County: York

Type of Deposit: Glaciofluvial terrace

Parish: Stanley

Exposure Type: Borrow pit

NTS: 21 J/10E

Status: Inactive (possibly active on demand)

UTM: 803708

Section Description & Comments:

A moderately-well sorted, non-stratified, sandy gravel is exposed in this pit. Clasts are subrounded and generally sound. A few cobbles and occasional boulder were observed. Few fines were observed.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	87.1	65.8	54.9	34.0	20.5	9.7	1.7	0.4	0.2	0.17	0.16

Lithologic Analysis:

Unsound Lithotypes (%) 6		Sound Lithotypes (%) 94	
Acid Igneous	6	Acid Igneous	80
		Basic Igneous *	10
		Metagreywacke	4

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
10.5	4	2	60,000

Location #: J10-27 County: York

Type of Deposit: Ice-contact: blanket Parish: Stanley

Exposure Type: Roadcut NTS: 21 J/10E

Status: Undeveloped UTM: 775688

Section Description & Comments:

A moderately-poorly sorted, non-stratified dirty gravelly sand is exposed in this cut. Cobbles are common (5-10%); a few boulders were observed. Clasts are subangular to subrounded. Some have clay coatings and a certain amount of fines seems to almost "bind" the materials together.

This unit overlooks Sisters Brook and is a narrow blanket on a moderately sloping hillside. Exploitation other than for local borrow purposes would be uneconomical. No reserves were estimated.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	85.4	77.9	71.4	56.5	45.2	44.0	36.4	26.2	16.6	9.6	5.7

Lithologic Analysis:

Unsound Lithotypes (%) 4		Sound Lithotypes (%) 96	
Acid Igneous	2	Basic Igneous *	44
Sedimentary	2	Acid Igneous	32
		Quartzite	4
		Metasediment	16

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
		2	

Location #: J10-28 **County:** York

Type of Deposit: Ice-contact: kame terrace **Parish:** Stanley

Exposure Type: Gravel pit **NTS:** 21 J/10E

Status: Inactive **UTM:** 771676

Section Description & Comments:

Approximately 7-8 m poorly sorted, crudely stratified and pocketed ice-contact cobbles, cobbly gravels, sandy gravels, gravelly sands and sands are exposed in this pit. Clasts are subangular and approximately 5% tend to be unsound. Few boulders were observed (largest 400 mm). Lithologies are variable.

Estimated texture: few boulders, cobbles 10-15%, pebbles 35%, sand 50-60%, few fines.

High cobble content makes this material suitable only for borrow or fill purposes, without mechanical processing (crushing).

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
4.5	3	5	150,000

Location #: J10-29

County: York

Type of Deposit: Ice-contact: blanket

Parish: Stanley

Exposure Type: Borrow site

NTS: 21 J/10E

Status: Inactive

UTM: 782658

Section Description & Comments:

Approximately 2 m of moderately-poorly sorted, non-stratified, cobbly gravelly sands are exposed here. Cobbles 10%, boulders ⁴few. Materials are slightly dirty . Clasts are subangular and generally sound.

This material is thought to be ice-contact due to the sorting and textural variabililty seen in this cut and along other roadcuts.

High cobble content makes this material suitable only for borrow or fill, without mechanical processing (crushing).

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
6	3	2	40,000

Location #: J10-30

County: York

Type of Deposit: Glaciofluvial blanket

Parish: Stanley

Exposure Type: Gravel pit

NTS: 21 J/10E

Status: Abandoned

UTM: 733734

Section Description & Comments:

Approximately 2 m of moderately-well sorted, poorly stratified fine pebbly, coarse sand is exposed here. From 0.2-0.3 m there is a band of sub-angular small cobbles/coarse gravel. Cobbles are few.

The sands are very compact below 0.5.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
8	2	2	25,000

Location #: J10-31 County: York

Type of Deposit: Ice-contact blanket/veneer over weathered granite Parish: Stanley

Exposure Type: Borrow site NTS: 21 J/10W

Status: Active on demand UTM: 704688

Section Description & Comments:

Approximately 1.0 to 1.5 m poorly sorted ice-contact materials overlie weathered granite. Clasts in the ice-contact materials are subangular. Size is variable from silty sand through to large cobbles small boulders.

The material has actually been excavated to a depth of 2.0-2.5 m, including some of the weathered rock.

Variable thickness of the ice-contact material and the unknown depth of weathering of the bedrock make estimation of reserves difficult. Therefore this was not attempted.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
		1.5	

Location #: J10-32

County: York

Type of Deposit: Alluvial terrace

Parish: Stanley

Exposure Type: Roadcut: borrow site

NTS: 21 J/10W

Status: Abandoned

UTM: 655628

Section Description & Comments:

Approximately 1.2 m medium sand overlies an undetermined depth of gravelly sand. Stream level is 4 m below the terrace surface. Potential exists that the gravelly sand extends deeper and could be exploited to possibly the level of the stream.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
12	10	1 (sand) 2 (gravelly sand)	200,000

Location #: J10-33

County: York

Type of Deposit: Glaciofluvial terrace

Parish: Stanley

Exposure Type: Roadcut

NTS: 21 J/10E

Status: Undeveloped

UTM: 761760

Section Description & Comments:

0 - 1.3 m Sand. Few pebbles, occasional cobble. Well sorted, non-stratified.

1.3 - 4.0 m Slump covered: appears to be pebbly sand.

This is an isolated deposit which may provide material for local use otherwise access restricts its potential development.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
20	16	3	450,000

Location #: J10-34 County: York

Type of Deposit: Glaciofluvial terrace Parish: Stanley

Exposure Type: Gravel pit and adjacent road-cuts NTS: 21 J/10E

Status: Abandoned UTM: 828712

Section Description & Comments:

Exposed in this pit are cobbly pebble gravels to a depth of 1.5-2.0 m. Clasts are rounded to subrounded. This deposit lies in between ridges and mounds of boulder/cobble mantled bedrock. The latter clasts and the bedrock are all granite.

To the west are some esker-like ridges (see J10-21) but these tend to disappear here. To the east is an undulating surface: probably weathered granitic bedrock and possibly veneered with glaciofluvial materials, as these have been observed still further to the east (see J10-23).

This is a small deposit with limited reserves, however, local concentrations of suitable aggregate can probably be found in the complex of ice-contact materials surrounding it if the need arises.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
3	1.5	1.0	15,000

Location #: J10-35 County: York

Type of Deposit: Glaciofluvial blanket Parish: Stanley

Exposure Type: Roadcut NTS: 21 J/10W

Status: Undeveloped UTM: 672595

Section Description & Comments:

Approximately 1.5-2.0 m cobbly sand is exposed in this roadcut. These materials are coarser than those of the glaciofluvial terrace to the north.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
5	2	1.0	20,000

Location #: J10-36

County: York

Type of Deposit: Glaciofluvial terrace

Parish: Stanley

Exposure Type: Roadcut

NTS: 21 J/10W

Status: Undeveloped

UTM: 658580

Section Description & Comments:

Approximately 2.5 m cobbly pebbly sand is exposed in this cut. Clasts are subangular to subrounded and of sound lithologies.

Elsewhere on this terrace are varying thicknesses of similar materials. These materials are underlain by bedrock which was observed in the stream bank.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
25	15	2.0	250,000

Location #: J10-37 County: York

Type of Deposit: Ablation Till (Ice-contact) Parish: Stanley

Exposure Type: Borrow pit NTS: 21 J/10E

Status: Abandoned UTM: 778597

Section Description & Comments:

Cobble gravel in a silty clayey coarse sand matrix is poorly exposed in this pit. No structure is evident.

The quality of material is poor but it has been used locally as the alternative in the area is shattered bedrock.

No estimate of reserves was attempted as till thickness is variable.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable

Location #: J10-38 County: York

Type of Deposit: Glaciofluvial blanket Parish: Stanley

Exposure Type: Borrow pit NTS: 21 J/10E

Status: Abandoned UTM: 866595

Section Description & Comments:

Approximately 2.0-2.5 m gravelly sands are exposed in this pit. Materials are similar to those of J10-13 but generally shallower.

No reserves were estimated as unit boundaries are indistinct and thickness varies over underlying bedrock.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
		2.0	

Location #: J10-39 County: York

Type of Deposit: Alluvial terrace Parish: Stanley

Exposure Type: Ditch and roadcut NTS: 21 J/10E

Status: Undeveloped UTM: 805740

Section Description & Comments:

1.0-1.5 m of gravelly sand and sandy gravels are exposed in this cut. Significant cobble content (approximately 15%).

Reserves are limited due to water table and stream proximity.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
15	10	1.0	50,000

Location #: J11-01

County: Victoria

Type of Deposit: Glaciofluvial

Parish: Gordon

Exposure Type: Roadcut

NTS: 21 J/11W

Status: Undeveloped

UTM: 257778

Section Description & Comments:

Approximately 1.5 m medium sand was observed and appeared to blanket the slope. There is no indication of extent of these sandy materials on the air photos. Mapping of boundaries was not attempted; no estimate of reserves was possible.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
		1.0	

Location #: J11-02 County: Victoria

Type of Deposit: Glaciofluvial veneer Parish: Gordon

Exposure Type: Borrow pit NTS: 21 J/11W

Status: Abandoned UTM: 295775

Section Description & Comments:

Approximately 2 m of subangular, blade-like, pebble-sized fragments were observed. Estimate: 5% cobbles, occasional boulder present. All clasts have a coating of fines.

This deposit thins rapidly upslope; bedrock outcrops on other side of the road. This pit is small: 15 m x 40 m.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	95.1	85.7	79.1	51.9	25.5	13.2	6.0	3.4	2.2	1.1	0.1

Lithologic Analysis:

Unsound Lithotypes (%)		Sound Lithotypes (%)	
Siltstone	8	Metasediment	52
Sedimentary	4	Acid Igneous	13
Slate	2	Quartzite	11
Conglomerate	2	Basic Igneous *	8

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
10	5	1.0	45,000

Location #: J11-03

County: Carleton

Type of Deposit: Ice-contact

Parish: Kent

Exposure Type: Gravel pit

NTS: 21 J/11W

Status: Inactive

UTM: 147643

Section Description & Comments:

0 - 10.0 m Massive, poorly sorted dirty gravelly sand. Crude stratification present in lower portion of section. Estimate 15% cobbles, 5-10% fines. Clasts are subangular to subrounded, and coated with clays. Weathered clasts are present (5%).

10.0 - 16.0 m Slump covered to pit floor. Materials appear granular.

16.0 - 30.0 m The deposit slopes from the pit floor to alluvial terrace (the terrace is off this sheet on 21 J/12E).

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	82.1	68.5	60.4	42.0	24.2	19.8	11.5	6.3	4.6	4.1	3.9

Lithologic Analysis:

Unsound Lithotypes (%) 4		Sound Lithotypes (%) 96	
Sandstone	4	Metasediment	42
		Sandstone	40
		Basic Igneous*	12
		Quartzite	2

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
6	5	16	400,000

Location #: J11-04 County: Carleton

Type of Deposit: Glaciofluvial terrace Parish: Aberdeen

Exposure Type: Borrow pit NTS: 21 J/11E

Status: Abandoned UTM: 452525

Section Description & Comments:

5.0 m of massive cobbly pebbly sand is exposed. Clasts are subrounded to subangular. Estimate: 10-15% pebbles, 5-10% cobbles, occasional boulders.

This is an extensive deposit and thickness varies. The surface is irregular and channelled. It is presently being reforested.

The reserve estimate given below is for the glaciofluvial materials lying to the south of the Miramichi River, downstream from The Forks.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	97.8	94.6	91.3	84.3	74.3	60.3	27.8	15.0	10.9	7.5	4.7

Lithologic Analysis:

Unsound Lithotypes (%) 27		Sound Lithotypes (%) 73	
Acid Igneous	20	Acid Igneous	37
Sedimentary	7	Metasediment	15
		Basic Igneous *	13
		Sandstone	6
		Andesite	2

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
200	150	4	6,000,000

Location #: J11-05

County: Carleton

Type of Deposit: Alluvial terrace

Parish: Aberdeen

Exposure Type: Roadcut

NTS: 21 J/11E

Status: Undeveloped

UTM: 402525

Section Description & Comments:

0 - 2.0 m Massive, well-sorted sands with few pebbles.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
17	8	1.0	75,000

Location #: J11-06 County: Carleton

Type of Deposit: Alluvial terrace Parish: Aberdeen

Exposure Type: Gravel pit NTS: 21 J/11E

Status: Active on demand UTM: 396532

Section Description & Comments:

0 - 2.0 m Massive, poorly to moderately sorted cobbly gravels. Clasts are subangular to subrounded. Estimate: 20% cobbles. No boulders were observed.

2.0 - 6.0 m Slump covered to pit floor. Materials are granular.

Other land uses, ie. forestry, may severely limit quantities of material available for use. Reserve estimates do not take this factor into account.

D.O.T. data (1959) indicates an average abrasion loss of 20.8% and recommends the material for subbase and base course. Significant fines content would normally class this as borrow material only. D.O.T. estimates reserves to be considerably less than indicated below due to this dealing only with material within specific property lines.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	79.5	62.7	53.9	36.9	28.0	20.1	11.7	4.5	1.6	0.8	0.7
D.O.T. 1959	67.0		47.5		29.0			6.2			2.9
D.O.T. 1959	67.0		52.8		32.0			7.5			2.9

Lithologic Analysis:

Unsound Lithotypes (%)		Sound Lithotypes (%)	
Acid Igneous	8	Acid Igneous	20
Sedimentary	2	Metasediment	16
		Sandstone	26
		Basic Igneous*	28

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
50	25	3	750,000

Location #: J11-07 County: Carleton

Type of Deposit: Glaciofluvial terrace Parish: Aberdeen

Exposure Type: Gravel pit NTS: 21 J/11E

Status: Abandoned UTM: 378559

Section Description & Comments:

0 - 1.0 m Moderately stratified, moderately-well sorted pebbly sands.
1.0 - 3.0 m Massive moderately well sorted pebbly sands.

Clasts are subangular to subrounded; many are platey. Estimate: 5% cobbles, few boulders observed.

Water table appears to be just at or below pit floor. The pit is currently used as a Public Dump.

This is an extensive deposit. Reserve estimates are tentative. Conflicting land uses may eliminate much of this deposit for exploitation purposes.

D.O.T. data (1971) indicates an abrasion loss of 22.5% and recommends the material for borrow and subbase. Reserves are thought to be limited, within the specific property areas they are concerned with.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											
D.O.T. 1971	89.0		70.0		43.0	34.0		12.0			1.9
D.O.T. 1971	98.0		83.0		46.0	39.0		19.0			0.9

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
150	120	3	3,000,000

Location #: J11-08 County: Carleton

Type of Deposit: Glaciofluvial outwash Parish: Aberdeen

Exposure Type: Gravel pit NTS: 21 J/11E

Status: Active on demand UTM: 389557

Section Description & Comments:

0 - 1.0 m Moderately-well sorted pebbly sands. Most larger clasts are platey and are aligned to the horizontal.

1.0 - 2.0 m Medium sand. The water table is present on the pit floor at 2.0 m.

This pit is in a very extensive area of glaciofluvial outwash materials (see map).

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
		2	See J11-10

Location #: J11-09

County: Carleton

Type of Deposit: Glaciofluvial outwash

Parish: Aberdeen

Exposure Type: Trench

NTS: 21 J/11E

Status: Undeveloped

UTM: 402542

Section Description & Comments:

1.0 m medium sand is exposed. The top 0.3 m has a soil developed in it.

This is part of a very extensive glaciofluvial outwash plain. Reserves were estimated for the portion of the deposit which is south of the roads leading to Juniper Station.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	-	-	-	99.6	98.1	95.3	83.2	58.5	15.4	1.8	0.9

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
200	180	1.0	1,800,000

Location #: J11-10 County: Carleton

Type of Deposit: Glaciofluvial outwash Parish: Aberdeen

Exposure Type: Trench NTS: 21 J/11E

Status: Undeveloped UTM: 384556

Section Description & Comments:

Approximately 1.0 m of moderately well sorted gravelly sands is exposed. Water table is at 1 m (bottom of trench).

This is part of a very extensive glaciofluvial outwash plain (see map). Reserves have been estimated for the portion of the deposit southwest of the railway.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	-	95.1	86.6	65.8	51.4	47.3	39.7	24.7	10.6	2.9	1.9

Lithologic Analysis:

Unsound Lithotypes (%) 2		Sound Lithotypes (%) 98	
Acid Igneous	2	Metasediment	40
		Sandstone	24
		Basic Igneous*	22
		Acid Igneous	12

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
360	300	1.0	3,000,000

Location #: J11-11

County: Carleton

Type of Deposit: Glaciofluvial

Parish: Aberdeen

Exposure Type: Dug hole

NTS: 21 J/11E

Status: Undeveloped

UTM: 344585

Section Description & Comments:

Approximately 0.5 m of dirty cobble gravel was exposed. Within the soil development horizon. Clasts are rounded to subrounded and platey.

This is part of an extensive area of glaciofluvial outwash materials.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
200	200	1.0	2,000,000

Location #: J11-12 County: Carleton

Type of Deposit: Glaciofluvial terrace Parish: Aberdeen

Exposure Type: Gravel pit NTS: 21 J/11E

Status: Active on demand UTM: 358571

Section Description & Comments:

Approximately 2.5 m of massive, moderately-poorly sorted sandy gravels are exposed here. The clasts are subrounded and have a platey form. Estimate: 5% cobbles, occasional boulder.

This is part of an extensive area of glaciofluvial outwash materials. Reserves were estimated for that area north of the town of Juniper.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	79.1	67.1	58.4	42.3	29.5	19.7	7.9	1.9	0.7	0.6	0.6

Lithologic Analysis:

Unsound Lithotypes (%) 10		Sound Lithotypes (%)	
Sedimentary	10	Sandstone	42
		Metasediment	32
		Basic Igneous *	10
		Quartzite	4
		Andesite	2

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
150	150	2.5	3,500,000

Location #: J11-13

Type of Deposit: Glaciofluvial Blanket

Exposure Type: Borrow pit

Status: Inactive

County: Carleton

Parish: Aberdeen

NTS: 21 J/11W

UTM: 295551

Section Description & Comments:

Approximately 1 m of poor to moderately sorted gravelly sands are exposed. Clasts are platey and subrounded. Estimate: 3-5% cobbles.

This pit is small: 20 x 30 m. There is a potato experimental farm located on this unit which might severely limit gravel extraction operations.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
150	50	1.0	200,000

Location #: J11-14 County: Carleton

Type of Deposit: Glaciofluvial terrace Parish: Aberdeen

Exposure Type: Gravel pit NTS: 21 J/11W

Status: Abandoned UTM: 298539

Section Description & Comments:

0 - 0.5 m Overburden - some is till-like.
0.5 - 2.0 m Exposed vertical section. Crudely stratified, moderately sorted gravels. The materials vary in texture both laterally and vertically from fine pebbles and sandy fine pebbles to cobble gravels.
2.0 - 4.0 m Slump covered to pit floor.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	88.4	70.0	62.1	38.6	9.4	5.7	3.3	2.1	1.4	1.2	1.0

Lithologic Analysis:

Unsound Lithotypes (%) 5		Sound Lithotypes (%) 95	
Sedimentary	4	Sandstone	19
Acid Igneous	1	Metasediment	50
		Andesite	11
		Basic Igneous *	14
		Rhyolite	1

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
25	10	1.5	150,000

Location #: J11-14a

County: Carleton

Type of Deposit: Glaciofluvial terrace

Parish: Aberdeen

Exposure Type: Gravel pit

NTS: 21 J/11W

Status: Active on demand

UTM: 299543

Section Description & Comments:

In this pit is an exposed section varying from 3.0-5.0 m high. Texture is extremely variable. Crude stratification is present in some areas, absent in others. Sorting varies from unsorted to good. Clasts are sub-angular (boulders, cobbles) and subrounded (cobbles, pebbles).

Estimate overall texture: less than 5% fines, 50-60% sand, 30% pebbles, 5-10% cobbles, few boulders.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
See J11-14		5	

Location #: J11-15 County: Carleton

Type of Deposit: Glaciofluvial Parish: Aberdeen

Exposure Type: Borrow pit NTS: 21 J/11W

Status: Active on demand UTM: 309575

Section Description & Comments:

0 - 0.2 m Overburden: soil and roots.
0.2 - 3.0 m Moderately-well stratified gravels and gravelly sands, with occasional sand lenses. Sorting is moderate to good. Clasts are subrounded to rounded and appear sound.

Excavation cannot go deeper because the water table is just below 3.0 m. The pit is small (10 m x 15 m). The area around the pit is being actively logged.

D.O.T. data (1971) indicate abrasion losses of 23.0% and 20.7%. The material is recommended for borrow, subbase, and base course aggregate. D.O.T. suggests that the deposit is erratic and has limited reserves within the property area.

Additional reserves approximately equal in magnitude are located upstream of this deposit.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	84.5	70.6	60.5	44.5	32.1	26.4	18.0	8.3	2.3	1.0	0.9
D.O.T. 1971	74.0		54.0	38.0	23.0	16.0		5.0			2.3
D.O.T. 1971	82.0		69.0	54.0	41.0	30.0		8.0			2.4

Lithologic Analysis:

Unsound Lithotypes (%)	Sound Lithotypes (%) 100
	Metasediment 44
	Sandstone 36
	Basic Igneous * 14
	Acid Igneous 4
	Quartz 2

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
35	20-25	2.0	300,000

Location #: J11-16

County: Carleton

Type of Deposit: Glaciofluvial veneer

Parish: Kent

Exposure Type: Dug hole

NTS: 21 J/11W

Status: Undeveloped

UTM: 263639

Section Description & Comments:

0 - 0.8 m Massive, poor-moderately sorted sands and gravels with 5-10% cobbles and occasional boulder. Clasts are platey. Materials are free of fines.

The above description comes from a dug hole and observation of a disturbed surface in the immediate area. No reserve estimate was attempted.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
		1.0	

Location #: J11-17 County: Carleton

Type of Deposit: Glaciofluvial blanket Parish: Kent

Exposure Type: Borrow site NTS: 21 J/6W

Status: Abandoned UTM: 283678

Section Description & Comments:

0 - 0.2 m Overburden.
0.2 - 1.0 m Exposed section: moderatly to poorly sorted gravelly sands in 10% cobbles and few boulders. Clasts are subrounded.
1.0 - 2.0 m Slump covered.

The boundaries of the unit are indistinct. No reserve estimate was made.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	77.7	67.1	61.6	48.1	35.2	30.3	21.2	13.6	7.7	5.9	5.1

Lithologic Analysis:

Unsound Lithotypes (%)	Sound Lithotypes (%) 100	
	Metasediment	44
	Basic Igneous *	28
	Acid Igneous	14
	Sandstone	14

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
		2.0	

Location #: J11-18 County: Victoria

Type of Deposit: Glaciofluvial terrace Parish: Gordon

Exposure Type: Gravel pit NTS: 21 J/11W

Status: Abandoned UTM: 263718

Section Description & Comments:

0 - 0.2 m Overburden.
0.2 - 1.5 m Exposed face: Massive, moderately sorted sandy gravels with 5-10% cobbles.
1.5 - 4.0 m Slump covered to pit floor. No boulders observed.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	85.9	71.4	61.2	41.6	29.3	20.9	9.6	2.4	0.9	0.75	0.7

Lithologic Analysis:

Unsound Lithotypes (%) 12		Sound Lithotypes (%) 88	
Sandstone	6	Sandstone	48
Basic Igneous	4	Metasediment	18
Felsic extrusive	2	Basic Igneous*	12
		Andesite	6
		Quartzite	2
		Acid Igneous	2

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
10	5	2.0	80,000

Location #: J11-19

County: Carleton

Type of Deposit: Glaciofluvial

Parish: Aberdeen

Exposure Type: Roadcut

NTS: 21 J/11W

Status: Undeveloped

UTM: 211547

Section Description & Comments:

Gravelly sand was observed from 3.0-3.3 m depth. The roadcut is overgrown and covered with organic detritus. Texture and depth of the underlying granular materials may vary considerably, the depth from 0.5 m to greater than 3.5 m.

The surface, which is currently being farmed, is undulating suggesting a kame complex. The extent of the deposit is limited.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
12	1-2	3.0	60,000

Location #: J11-20

County: Carleton

Type of Deposit: Alluvial terrace

Parish: Aberdeen

Exposure Type: Roadcut

NTS: 21 J/11W

Status: Undeveloped

UTM: 279528

Section Description & Comments:

Approximately 1 m of gravelly sand is exposed in a roadcut near the creek. No stratification is evident, clasts are subrounded to rounded and platey.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
18	4	1.0	20,000

Location #: J11-21 County: Carleton

Type of Deposit: Glaciofluvial Parish: Aberdeen

Exposure Type: Trench NTS: 21 J/11E

Status: Undeveloped UTM: 382516

Section Description & Comments:

0 - 0.5 m Podzolic soil development in dirty pebbly sands and fines.
0.5 - 0.8 m Pebbly sands and fines. Pebbles are rounded and sound; maximum diameter: 2.5 cm.
0.8 - 2.0 m Till. Few cobbles observed. Compact.

These materials have a high fines content which renders it usable only for borrow purposes. No reserves estimate was made.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
		1.0	

Location #: J11-22

County: Carleton

Type of Deposit: Glaciofluvial

Parish: Aberdeen

Exposure Type: Gravel pit

NTS: 21 J/11E

Status: Abandoned

UTM: 382515

Section Description & Comments:

Approximately 6 m of sandy cobbly gravel is exposed in the backwall of this pit. Though poorly exposed, there seems to be a trend to a more gravelly sandy texture near the base. Part of the pit floor is sand. Sorting is poor to moderate and no stratification is apparent. Clasts are subangular to subrounded and generally of sound lithotype.

Estimate texture: boulders few cobbles 25-30%, pebbles 40%, sand 30%, fines-trace.

Height of the pit face varies from 1.5 m at sides to 6.0 m near center back.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	90.0	77.1	70.0	49.1	28.8	18.3	7.6	2.3	0.9	0.8	0.7

Lithologic Analysis:

Unsound Lithotypes (%) 18		Sound Lithotypes (%) 92	
Acid Igneous	16	Basic Igneous *	26
Sedimentary	2	Metasediment	24
		Acid Igneous	18
		Sandstone	10
		Andesite	4

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
17	5	2.0	100,000

Location #: J11-23 County: Carleton

Type of Deposit: Glaciofluvial terrace Parish: Aberdeen

Exposure Type: Gravel pit NTS: 21 J/11E

Status: Inactive UTM: 365561

Section Description & Comments:

Approximately 2-2.5 m of moderately sorted, and poorly stratified gravelly sands are exposed in this pit. Clasts are somewhat platey especially in the fine pebble/coarse sand fraction. Pebbles and cobbles are dominantly subrounded to subangular. Cobbles represent less than 2% of total. A few scattered boulders were observed on the pit floor.

This terrace is just above river level; water is present in low spots on the pit floor. The deposit is extensive.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	96.1	82.4	73.2	58.5	44.1	29.0	13.6	4.7	2.2	1.9	1.7

Lithologic Analysis:

Unsound Lithotypes (%) 2		Sound Lithotypes (%) 98	
Conglomerate	2	Sandstone	40
		Basic Igneous *	26
		Metasediment	18
		Felsic extrusive	6
		Siltstone	6
		Quartz	2

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
		2	See J11-07

Location #: J11-24

County: Carleton

Type of Deposit: Glaciofluvial

Parish: Kent

Exposure Type: Disturbed surface

NTS: 21 J/11W

Status: Undeveloped

UTM: 278702

Section Description & Comments:

Approximately 1.0 m of dirty gravelly sands are exposed at this site. A dug hole showed sorting to be poor to moderate; no stratification was apparent. Clasts vary from some very rounded gravels to some angular broken rock fragments.

Estimate: cobbles 3%, boulders - 1 observed, fines 10-15%.

There seems to be the occasional pocket of fines within the materials suggesting very poor sorting on a broad scale.

Due to the poor quality of the materials, no estimate of reserves was made. (See map for extent.)

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
		1	

Location #: J11-25 County: York

Type of Deposit: Ice-contact (kettle & Kame) Parish: Douglas

Exposure Type: Roadcut(s) NTS: 21 J/11E

Status: Undeveloped UTM: 472525

Section Description & Comments:

Variably sorted, well stratified to massive granular materials are present in the roadcuts along this new road (Irving "A"). Deposits vary in texture from sand/pebbly sand to bouldery gravel. Not many fines are present in the hummocks; there is some accumulation in the hollows causing ponding and resultant swampiness.

Generally boulders do not exceed 0.5 m diameter although a few very large (ice-rafted) boulders are present. Overall texture is gravelly sand/sandy gravel/gravel. Cobbly bouldery areas seem to be localized.

Due to nature of deposit, thickness is extremely variable: minimum 1 m, maximum 5-6 m.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
110	70	2	1,000,000

Location #: J11-26

County: York

Type of Deposit: Till

Parish: Douglas

Exposure Type: Trench

NTS: 21 J/11E

Status: Inactive

UTM: 497539

Section Description & Comments:

Approximately 1.5 m of moderately-poorly sorted non-stratified materials are exposed here. Clasts are subangular to subrounded. Estimated texture: occasional boulder, cobbles 5-10%, gravel approximately 25%, sand (medium-fine) 65-70%, fines 5%.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
N.A.		1.5	N.A.

Location #: J11-27 County: Carleton

Type of Deposit: Glaciofluvial Parish: Aberdeen

Exposure Type: Roadcut NTS: 21 J/11E

Status: Road under construction UTM: 419586

Section Description & Comments:

0 - 1.0 m Well sorted medium-fine sand with occasional pebbles and cobbles. Large clasts are subrounded. Sands are not compact but hold together.

1.0 - 2.0 m Moderately-well sorted, crudely stratified gravelly coarse sands. Gravels are subrounded to round. Sands are compact and contain few large clasts. Some of the gravel-sized clasts have clay coatings

The glaciofluvial deposit located immediately to the west which extends southward to the Miramichi River contains an estimated 5,000,000 m^3 additional reserves.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	96.6	88.4	85.2	75.4	67.0	59.4	32.7	14.1	7.8	5.4	4.4

Lithologic Analysis:

Unsound Lithotypes (%) 36		Sound Lithotypes (%) 64	
Siltstone	20	Acid Igneous	22
Acid Igneous	10	Basic Igneous *	22
Volcanic	4	Metasediment	12
Conglomerate	2	Sandstone	6
		Quartzite	2

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
37	15	2	100,000

Location #: J11-28

County: Carleton

Type of Deposit: Ice-contact

Parish: Kent

Exposure Type: Roadcut

NTS: 21 J/11E

Status: Undeveloped

UTM: 449600

Section Description & Comments:

Approximately 2.0 m of pebbly medium to coarse sand is exposed here. No stratification was evident. Texture estimate: 90% sand, 10% pebbles (dominant), cobbles and boulders.

Nearer the creek, cobbles and boulders are more significant within the coarse fraction.

This deposit has an irregular, hummocky surface - possibly a small kame complex.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
20	8-10	1.0	100,000

Location #: J11-29 County: Carleton

Type of Deposit: Glaciofluvial outwash Parish: Kent

Exposure Type: Borrow pit NTS: 21 J/11E

Status: Inactive UTM: 455623

Section Description & Comments:

Approximately 2.5 - 3.0 m of pebbly sand is exposed in this pit. Materials are moderately-well sorted and poorly stratified. Clasts are sub-rounded. Overall texture estimate: trace of fines, 85% sand, 10 - 12% pebbles, 3 - 5% cobbles, occasional boulders.

Pebbles and cobbles are dominantly granitic, a few of which are quite weathered. The sand appears to have been derived from granitic rock.

The boundaries of this unit are approximate and thickness is likely variable. Reserve estimates are tentative.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	94.3	91.1	86.8	80.9	77.3	71.2	46.5	13.8	2.3	0.6	0.5

Lithologic Analysis:

Unsound Lithotypes (%) 42		Sound Lithotypes (%) 58	
Acid Igneous	42	Acid Igneous	32
		Sandstone	10
		Basic Igneous *	6
		Metasediment	6
		Quartz	4

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
150	30	2.0	750,000

Location #: J11-30

County: Carleton

Type of Deposit: Glaciofluvial outwash

Parish: Kent

Exposure Type: Trench

NTS: 21 J/11E

Status: Undeveloped

UTM: 405698

Section Description & Comments:

2.0-2.5 m sandy cobbly gravels are exposed. Clasts are sub-rounded to rounded. Small pebbles (less than 3/4") are often platey. Materials are poorly to moderately sorted; some crude stratification is evident. Texture is extremely variable laterally; the top 1.0 m contains a significant percentage of fines. Texture estimate at site: 35% sand, 50% pebbles, 15% cobbles, no boulders observed. (Does not include top 1.0 m).

Up the road 100 m the deposit becomes very sandy.

This is part of an extensive glaciofluvial outwash that is channelled and includes some swamp areas. Water table is estimated at 2.0 to 4.0 m depth. Further to the south another glaciofluvial deposit could be expected to contain an additional 2,500,000 m^3 reserves.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	83.9	73.8	67.6	51.8	36.0	20.1	7.1	1.8	1.0	-	-

Lithologic Analysis:

Unsound Lithotypes (%) 18		Sound Lithotypes (%) 82	
Acid Igneous	14	Basic Igneous*	22
Sedimentary	4	Metasediment	18
		Sandstone	18
		Andesite	18
		Acid Igneous	6

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
250	200	2	4,000,000

Location #: J11-31

County: Carleton

Type of Deposit: Glaciofluvial

Parish: Aberdeen

Exposure Type: Gravel pit

NTS: 21 J/11E

Status: Inactive

UTM: 497592

Section Description & Comments:

Approximately 2.0 m moderately sorted, non-stratified, gravelly sand is exposed here. Clasts are subrounded and sound. Texture: boulders - occasional, cobbles 5-10%, pebbles 25%, sand 70%, fines-trace.

Below 1.0 m the materials, particularly the sand, are moderately compact.

Water table is at 2.0 m, ponding on pit floor.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	92.3	77.2	71.3	59.1	52.1	45.3	29.7	9.2	2.0	1.5	1.4

Lithologic Analysis:

Unsound Lithotypes (%) 20		Sound Lithotypes (%) 80	
Acid Igneous	20	Acid Igneous	48
		Sandstone	20
		Metasediment	6
		Quartzite	4
		Quartz	2

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
60	20	1	200,000

Location #: J11-32 County: Carleton

Type of Deposit: Glaciofluvial blanket Parish: Kent

Exposure Type: Roadcut NTS: 21 J/11E

Status: Undeveloped UTM: 507655

Section Description & Comments:

0 - 0.5 m	Pebbles and cobbles in silty sandy matrix; occasional large boulders.
0.5 - 1.2 m	Well sorted medium and coarse sand, non-stratified. Contains up to 10% pebbles, occasional cobble. Laterally the texture varies to contain pockets of cobble gravel.
1.2 - 1.5 m	Weathered granitic bedrock.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
30	20	1.0	130,000

Location #: J11-33

County: Carleton

Type of Deposit: Glaciofluvial blanket

Parish: Kent

Exposure Type: Roadcut

NTS: 21 J/11E

Status: Undeveloped

UTM: 523674

Section Description & Comments:

Approximately 1.5 m of well sorted, non-stratified medium-grained sands are exposed here. Occasional pebbles and cobbles were observed. The materials become more compact with depth until a recognizable weathered granite is reached at 2.0 m.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
200	35	1	250,000

Location #: J11-34

County: Carleton

Type of Deposit: Till/weathered bedrock

Parish: Kent

Exposure Type: Borrow quarry

NTS: 21 J/11E

Status: Inactive

UTM: 490691

Section Description & Comments:

0 - 0.5 m Till: pebbles and occasional cobbles in silty sand matrix. A few large boulders were noted.

0.5 - 1.8 m Increasingly compact coarse sand, non-stratified. A few small pebbles were observed near upper boundary.

1.8 - 2.0 m Weathered granite.

The upper 1.5 m of unconsolidated material has been used as borrow for local road maintenance.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
N.A.		1.5	

Location #: J11-35

County: Victoria

Type of Deposit: Glaciofluvial

Parish: Gordon

Exposure Type: Borrow pit

NTS: 21 J/11E

Status: Abandoned

UTM: 428788

Section Description & Comments:

Approximately 2.5 m of moderately sorted, poorly stratified gravelly sands are exposed in the pit face. Clasts are subangular to subrounded and have a dominant platey shape (lithology: shale, slate, phyllite). The materials become more dominantly sands with increasing depth.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
6	4	2	80,000

Location #: J11-36 **County:** Carleton

Type of Deposit: Glaciofluvial terrace **Parish:** Aberdeen

Exposure Type: Trench **NTS:** 21 J/11E

Status: Undeveloped **UTM:** 405565

Section Description & Comments:

0 - 0.8 m Medium sand, well sorted, non-stratified.
0.8 - 1.6 m Gravelly sand. Moderately sorted, non-stratified. Clasts subrounded to round. Texture: boulders - none observed, cobbles few, pebbles 30-35%, sand 65%, fines less than 5%. Some of the larger clasts had clay coatings.

This is part of an extensive glaciofluvial outwash deposit.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
		2.0	See J11-38

Location #: J11-37 County: Carleton

Type of Deposit: Glaciofluvial terrace Parish: Aberdeen

Exposure Type: Trench NTS: 21 J/11E

Status: Undeveloped UTM: 403578

Section Description & Comments:

0 - 1.2 m Fine gravelly sand grading downwards to coarse medium sand with fine pebbles in it. Poorly stratified, moderately-well sorted. Clasts subrounded and often platey. No cobbles or boulders observed.

1.2 - 1.5 m Medium to fine sand. Well sorted, non-stratified.

1.5 - 2.7 m Slump covered to water table.

This is part of an extensive glaciofluvial outwash deposit.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
		2.5	See J11-38

Location #: J11-38 County: Carleton

Type of Deposit: Glaciofluvial Parish: Aberdeen

Exposure Type: Gravel pit NTS: 21 J/11E

Status: Active on demand UTM: 404588

Section Description & Comments:

Approximately 3 m of gravelly sand is exposed here in this pit. Materials are moderately-well sorted, and show poor to moderate stratification. There are few fines (less than 1%); a few boulders were observed on the pit floor. Clasts are subangular (large) and subrounded (small). Many lithologies are present; most are sound.

Estimated texture: boulders few cobbles - none observed, pebbles 30-35%, sand 65%, fines - trace. Generally the pebbles are larger than in J11-37.

This deposit is part of extensive glaciofluvial outwash plain. Reserves are calculated for the narrow strip of glaciofluvial materials described by J11-36, J11-37, and J11-38.

To the northwest surrounding the Juniper Barren, an additional 11,000,000 m^3 of glaciofluvial materials are present.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing		93.3	86.3	55.7	32.3	25.4	17.9	8.7	0.9	0.3	0.3

Lithologic Analysis:

Unsound Lithotypes (%) 6		Sound Lithotypes (%) 94	
Acid Igneous	6	Basic Igneous *	26
		Acid Igneous	20
		Sandstone	18
		Andesite	16
		Metasediment	12
		Quartz	2

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
100	60	3	1,500,000

Location #: J11-39

County: Victoria

Type of Deposit: Glaciofluvial

Parish: Kent

Exposure Type: Roadcut

NTS: 21 J/11E

Status: Undeveloped

UTM: 388618

Section Description & Comments:

Approximately 1-1.5 m of coarse pebbly sand is exposed here. Materials are moderately sorted and show no apparent stratification. Clasts are subangular to subrounded. A few weathered granitic clasts (3.5 - 5.0 cm diameter) were observed.

This is part of a large outwash plain that is channelled and includes swampy areas. The water table appears to be at 2.0 - 3.0 m depth.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
300	200	1.5	3,000,000

Location #: J11-40 County: Carleton

Type of Deposit: Glaciofluvial blanket Parish: Kent

Exposure Type: Borrow pit NTS: 21 J/11E

Status: Inactive UTM: 518719

Section Description & Comments:

Approximately 1.5 m of medium to coarse sand overlying weathered granite is exposed. Up to 5-10% angular boulders and cobbles are present. All lithologies are that of or derived from the granite. Although the upper sands appear to have been transported (evidence: few rounded pebbles present), the sands at depth may be completely weathered granite.

Water is present on the pit floor.

Depth of weathering and deposit thickness is variable. Unit boundaries are indistinct.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
90	25	1.5	300,000

Location #: J11-41 County: Carleton

Type of Deposit: Weathered bedrock Parish: Kent

Exposure Type: Borrow quarry NTS: 21 J/11E

Status: Abandoned UTM: 522716

Section Description & Comments:

A veneer of glaciofluvial materials overlie the deeply weathered granite that is exposed here. The granite weathers to a coarse angular sand. Depth of weathering estimated at 1.5-2.0 m.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
N.A.		1.5	

Location #: J11-42 County: Carleton

Type of Deposit: Glaciofluvial blanket Parish: Kent

Exposure Type: Roadcut/borrow site NTS: 21 J/11E

Status: Undeveloped UTM: 514707

Section Description & Comments:

A pebbly sand overlies weathered granite. Estimate texture: 2% greater than 75 mm, up to 10% pebbles, 90% sand.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
7.5	2.0	1.0	8,000

Location #: J11-43 County: Carleton

Type of Deposit: Weathered bedrock Parish: Kent

Exposure Type: Borrow quarry NTS: 21 J/11E

Status: Abandoned UTM: 509704

Section Description & Comments:

This pit exposes weathered granite and the coarse sand derived from it. Depth of weathering is 1.5 m.

Approximately 20 cm silty fine sand overlies the weathered materials.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
N.A.		1.5	

Location #: J11-44

County: Carleton

Type of Deposit: Till

Parish: Kent

Exposure Type: Trench

NTS: 21 J/11E

Status: Undeveloped

UTM: 500674

Section Description & Comments:

Cobbly bouldery sandy till overlies very coarse sand which rapidly changes to weathered granitic bedrock.

This type of unconsolidated material is very wide spread in this area. Very small borrow pits in weathered rock with or without a veneer of till on the slopes or glaciofluvial materials in valley bottoms are very common. Average depth is 1.5 m.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
N.A		1.0	

Location #: J11-45

County: Carleton

Type of Deposit: Till

Parish: Kent

Exposure Type: Borrow site

NTS: 21 J/11E

Status: Abandoned

UTM: 436648

Section Description & Comments:

A cobbly bouldery till with a silty coarse sand matrix is exposed here. Cobbles and boulders are subangular, granitic, and often weathered to the point of being friable.

This is typical of the material found in this area. It has been used in logging road construction.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
N.A.			

Location #: J11-46

County: Carleton

Type of Deposit: Glaciofluvial blanket

Parish: Kent

Exposure Type: Borrow pit

NTS: 21 J/11E

Status: Abandoned

UTM: 453627

Section Description & Comments:

Approximately 1 m of pebbly sands are exposed. A few (ice-rafted) boulders were noted. Estimated texture: few boulders, trace cobbles, 25% pebbles, 75% sand.

The unit boundaries are not distinct and thickness of materials is thought to be quite variable.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis:

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
150		1.0	See J11-29

Location #: J11-47

County: Carleton

Type of Deposit: Till

Parish: Aberdeen

Exposure Type: Borrow pit

NTS: 21 J/11E

Status: Active on demand

UTM: 480556

Section Description & Comments:

Bouldery sandy till. These materials are similar to those of J11-26 except that the cobble and boulder content is higher.

Several stockpiles of material are here, presumably for local road construction and resurfacing.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
N.A.			

APPENDIX 2

BORROW PITS IN FRACTURED AND WEATHERED BEDROCK

NTS: 21 J/6		Name: COLDSTREAM	
UTM	Location Number	Rock Type	Observations
276244	-	Sandstone	Abandoned; shattered into fragments 2" and smaller.
285244	J6-38	Sandstone Pebble Conglomerate	Weathered to coarse sand & pebbles; glaciofluvial veneer; abandoned.
378257	-	Sandstone	Abandoned; shattered into fragments 2" and smaller.
393262	-	Sandstone	Abandoned; coarse grained, weathered.
415274	-	Sandstone	Abandoned; broken rock fragments.
434435	J6-53	Granite	Weathered to 1.0 m depth; disintegrates into coarse sand.
435447	J6-54	Granite	Weathered to 1.5 m: easily excavated.
492458	J6-55	Granite	Weathered to 1.0 m depth; overlain by 2.0 m ablation.
526421	-	Metavolcanics	Abandoned; broken rock fragments.

NTS: 21 J/7		Name: NAPADOGAN	
UTM	Location Number	Rock Type	Observations
842472	-	Shale	Demand use; till veneer is mixed with shale for use.
871481	-	Metasediment	Abandoned.
875453	-	N.A.	Abandoned; till blanket/ veneer overlying shattered rock.
899494	-	Metasediment	Abandoned.
900492	-	Metasediment	Abandoned.
902269	-	Sandstone/ Shale	Abandoned.
907272	-	Sandstone/ Shale	Abandoned.
910270	-	Sandstone/ Shale	Abandoned.

NTS: 21 J/10		Name: HAYESVILLE	
UTM	Location Number	Rock Type	Observations
716555	-	Shale	Abandoned.
720545	-	Shale	Abandoned.
728581	-	Quartzite	Highly fractured; abandoned.
742586	-	Granite	Weathered to coarse sand; abandoned.
744728	-	Metasediments	Abandoned.
773585	-	Metasediments	Iron oxide coatings; abandoned.
788797	-	Granite	Weathered to fine pebble coarse sand to 6 m depth; demand use.
789573	-	Shale & Phyllite	Abandoned.
800587	-	Metasediments	Abandoned.
806601	-	Metasediments	Iron oxide coatings; abandoned.
807577	-	Shale & Sandstone	Abandoned.
808763	-	Granite	Weathered to coarse sand & fine pebbles to 3.0 m depth.
809749	-	Granite	Weathered; demand use.
846763	-	Granite	Weathered to greater than 1.0 m depth.
848761	-	Granite	Weathered; area cleared for extraction.
856715	-	Granite	Weathered; till veneer present.
867619	-	Shale	Demand use; excavated to 5-6 m depth; till veneer present.
871582	-	Shale	Abandoned.
901716	-	Shale	Abandoned.

NTS: 21 J/7		Name: NAPADOGAN	
UTM	Location Number	Rock Type	Observations
542430	-	Metavolcanic	Abandoned
547350	-	Metasediment	Abandoned
551360	-	Metasediment	Abandoned; broken to 2" fragments.
552432	-	N.A.	Abandoned; down to competent bedrock.
561339	-	Shale	Abandoned.
576412	-	N.A.	Abandoned; down to competent bedrock.
592338	-	Shale	Abandoned.
597458	-	Shale	Abandoned.
598450	-	Shale	Abandoned.
598453	-	Shale	Abandoned.
603247	-	Metasediment	Abandoned.
604468	-	Shale	Abandoned.
608466	-	Shale	Abandoned.
618380	-	Shale	Abandoned.
619387	-	N.A.	Abandoned quarry.
625253	-	Metasediment	Abandoned.
709440	-	N.A.	Abandoned.
796453	-	Phyllite	Abandoned; till veneer overburden.
796482	-	Metasediment	Abandoned.
804506	-	Shale	Abandoned.
809443	-	Phyllite	Abandoned; till veneer overburden.
814453	-	Shale/ Phyllite	Inactive.

NTS: 21 J/10		Name: HAYESVILLE	
UTM	Location Number	Rock Type	Observations
537671	-	Granite & Highgrade Metamorphics	Weathered to 2.5 m depth.
563665	-	Granite & Metamorphics	Weathered rock.
571657	-	Unknown; poss. Granite or Metamorphics	Not accessible at present; demand use.
617726	-	Granite	Weathered; stripped to solid rock, abandoned.
617727	-	Granite	Weathered; stripped to solid rock, abandoned.
617730	-	Granite	Weathered; stripped to solid rock, abandoned.
632677	-	Granite	Weathered.
633722	-	Granite	Weathered; stripped to solid rock, abandoned.
633731	-	Granite	Weathered; stripped to solid rock, abandoned.
636764	-	Granite	Weathered, disintegrating.
649707	-	Granite	Weathered; stripped 0.5-1.0 m to solid rock.
654707	-	Granite	Weathered; stripped 0.5-1.0 m to solid rock.
661707	-	Granite	Weathered; stripped 0.5-1.0 m to solid rock.
671577	-	Metasediments	Abandoned.
690584	-	Metasediments	Abandoned.
710570	-	Shale	Abandoned.

NTS: 21 J/11		Name: JUNIPER	
UTM	Location Number	Rock Type	Observations
286651	-	Shale	Abandoned.
292658	-	Shale	Abandoned.
337638	-	Shale	Abandoned.
463683	-	Granite	Inactive; weathered, disintegrating.
484744	-	Granite	Inactive; weathered, disintegrating.
490691	J11-34	Granite	Inactive; weathered, disintegrating; till veneer present.
493737	-	Granite	Inactive; weathered, disintegrating.
509704	J11-43	Granite	Abandoned; weathered, disintegrating to coarse sand; silty fine sand veneer.
517655	-	Granite	Abandoned; weathered, disintegrating.
522716	J11-41	Granite	Abandoned; weathered, disintegrating to coarse sand; glaciofluvial veneer.

MAPS NOT

FILMED

CARTES

OMISES